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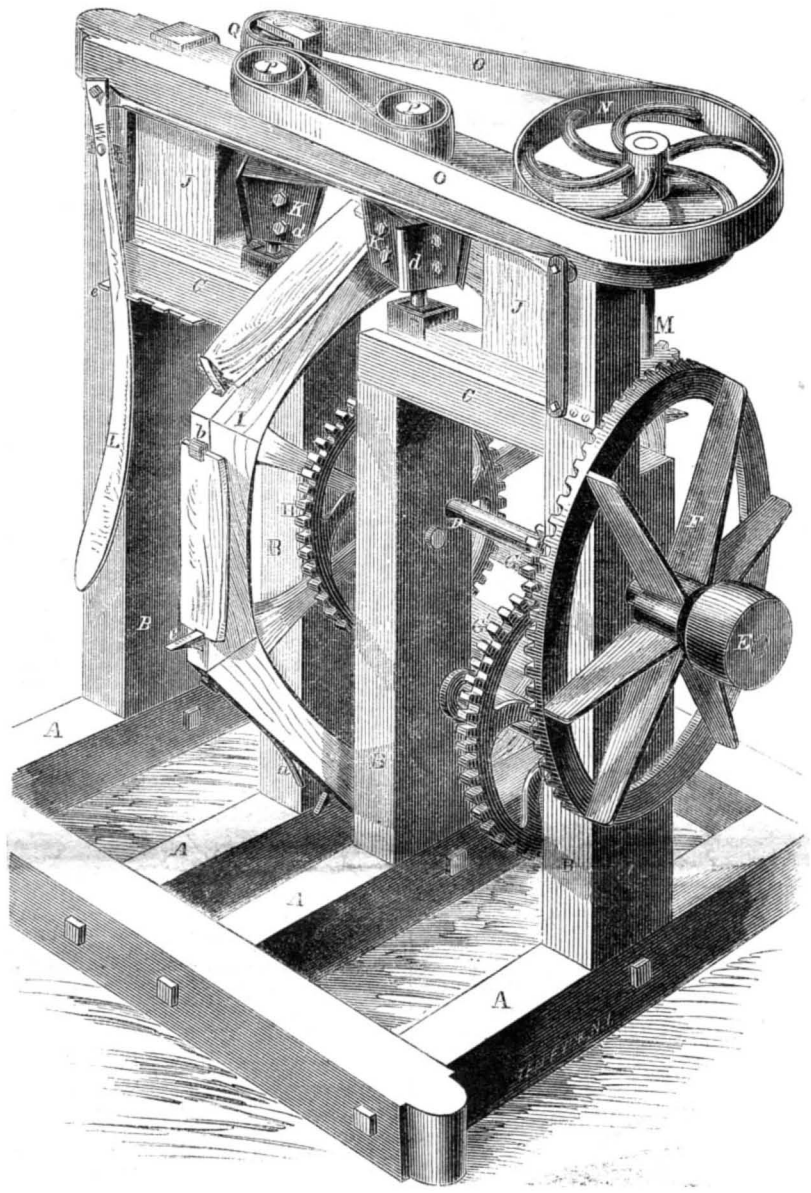
Ice Phenomena Explained.

We have received a letter from Mr. J. W. Norcross, of South Bay, Oneida Lake, N. Y., in reference to the ice phenomena described on page 177, present volume of the SCIENTIFIC AMERICAN, as having been witnessed on Rice Lake, C. W., by Mr. Dumble. We have not space for the entire communication of our correspondent, but will endeavor to present its substance. He has had excellent opportunities during this changeable winter for observing the effects of varying temperatures upon the ice. He anchored a small steamboat in Oneida Lake, and when the water had frozen to about four inches in thickness, a deep fissure appeared passing near and in direct line with the boat, extending for several miles. This fissure has been examined daily, and has formed a perfect indicator of the ice movements. Soon after the lake was frozen over, there came a thaw, and the ice moved two feet by expansion—about ten times more in amount than that of any contraction which has taken place. Contraction has always been sudden, almost instantaneously, and has usually taken place very soon after the surface water began freezing; whenever the whole surface of the water was frozen, contraction ceased. Expansion of the ice has always been slow, and has continued as long as the thermometer stood above the freezing point. Expansion never has taken place except when there was surface water exposed; none has taken place on Oneida Lake by the simple heat of the sun, when the atmosphere was below freezing temperature. Mr. Dumble, in his observations, appears to attribute such phenomena to wrong causes. The following are those which produce such effects, according to the observations of Captain Norcross:—

"The water in freezing leaves innumerable vertical seams in the ice. When it commences thawing, these open, the water enters them, and from their inclined shape it acts upon the entire ice like so many wedges to thrust the whole apart, thus causing the great and gradual expansion. The very reverse phenomena should take place in freezing, as these seams are widest at the top; hence as a consequence, when the water commences freezing, the contraction is sudden, and of less extent. When the ice grows very thick—to about two feet in depth—it becomes more compact; all the seams cement together, and the whole phenomena of the ice movements cease."

The permanganate of potash dissolved in water, at the rate of one drachm to the pint, is stated to be a wonderful soothing agent for burns and scalds.

HALDERMAN'S STAVE-JOINTER.



The want of a simple, cheap, and efficient stave-jointer has long been felt, especially for flour barrels, where a perfect joint is of great importance, as it not only protects the contents from injury, but adds to the strength of the barrel.

Our illustration shows a stave-jointing machine that, when run at the required speed, will make an excellent joint, suitable for "tight work" or "loose." It makes the bilge uniform, and the staves of equal width at both ends; and they are thrown off as quick as finished by a simple automatic arrangement.

A is a horizontal framing, having uprights, B, attached to it, and connected by cross-ties, C. D is a shaft, having its bearings in B, and carrying a driving pulley, E, bevel wheel, F, and spur wheel, G. This spur wheel, G, drives another, G′, which, in its turn, by gearing, H, gives motion to the polygonal wheel, I. This polygonal wheel is mounted between the uprights, B B, so that it is free to rotate between them. On each surface of I a spring, *a*, clamp, *b*, and spring clamp, *c*, are secured, to hold the stave while being jointed. On the top of the cross-ties, C, slides, J, are placed, carrying the cutters, K, according to the inclination of the bits, *d*, on which the "bilge" will be regulated. These cutters can be brought nearer together or moved further apart by the lever handle, L, and toggles, secured to the slides, the handle being secured in any position by a rack, *e*. The cutters are rotated from the bevel wheel, F, by a vertical shaft, M, carrying a band wheel, N, the band, O, of which, passes around pulleys, P P, on the shafts of the cutters, K, and round a compensating pulley, Q, to keep the band properly "taut" at whatever distance the cutters may be placed from each other.

The operation is as follows:—Power being applied to E, the cutter-heads are rotated by F, and the means just described. The wheel, G′, is also rotated comparatively slowly from D by G, and G′ again rotates H and I still more slowly by a small gear wheel (not seen in the illustration), the relative size of the pulleys being such as to insure a proper slow movement of I. The staves being placed on I, they are caused to pass between the cutters. The ends being the highest, have, of course, more cut away, and the centers being the lowest, have the least, on account of the inclination of the cutters and the difference of the distance between the center of each surface of I and its center and the ends of each surface. This forms the bilge. The action may be simply described thus:—When the stave first comes between the cutters it is cut away to form the end of the stave, and as it passes through them, it gradually descends until it arrives at the center; it then gradually ascends to the same point on the cutter as the other end, and so is cut equally. When cut, a spring on the side of the machine (not seen) catches and holds back *c*, releasing the stave, and the spring, *a*, throws it off. Staves can be jointed by this machine as fast as they can be put on the wheel, I, by an attendant. A foot lever may be substituted for L, if desired.

The inventor is W. Halderman, of Freeport, Ill., and he will be happy to correspond with any parties wishing further information. The patent is dated Oct. 19, 1858.

District Telegraphs.

A company has been formed in London for the purpose of providing the citizens with the means of telegraph communication as a substitute for post-carriers. The city is to be divided into eleven districts, each containing one hundred stations, so as to ensure the delivery of any dispatch in a very few minutes in any part of the metropolis. Messages of ten words are to be sent any distance within four miles for about eight cents. In our opinion the telegraph has not yet fulfilled its true mission, and it never will do so until it is rendered so perfect and economical in its operations as to be a substitute for the letter-carrier to an extent not yet dreamed of by its promotors. This London telegraph company is moving on the right track to secure this end, but we think New York once had some some such system at work, which dropped through.

Omnibus Cleanliness.

In Paris the doors have been removed from the omnibuses, to the great benefit of passengers, who thereby obtain an abundance of fresh air—something which they were unable to do before. This kind of vehicles are generally very close and confined, and doors are more of an incumbrance than a benefit. The floors of Paris omnibuses are never covered with straw or matting, but wooden slats or rails, with spaces of about half an inch between them. These act as a scraper for the passenger's feet, and the dirt falls on the floor below, which is inclined. The jolting of the omnibus makes this dirt run to the back end, where it falls out by gutters on the street, and thus the floor is always kept in a clean condition.

Concrete Floors.

The lower floors of all the cellars of houses should be composed of a bed of concrete about three inches thick. This would tend to render them dry, and more healthy, and at the same time prevent rats from burrowing under the walls from the outside, and coming up under the floors—the method pursued by these vermin where houses are erected on a sandy soil. This concrete should be made of washed gravel and hydraulic cement. Common mortar mixed with pounded brick and washed gravel, makes a concrete for floors nearly as good as that formed with hydraulic cement. Such floors become very hard, and are much cheaper than those of brick or flagstones.

New Electric Conductor.

The power of straw as a conductor of electricity has been utilized in the south of France, no less than eighteen communes in the neighborhood of Tarbes having been provided with conductors composed of straw. Experiments show that an electrical shock sufficiently powerful to kill an ox may be discharged by a single straw.

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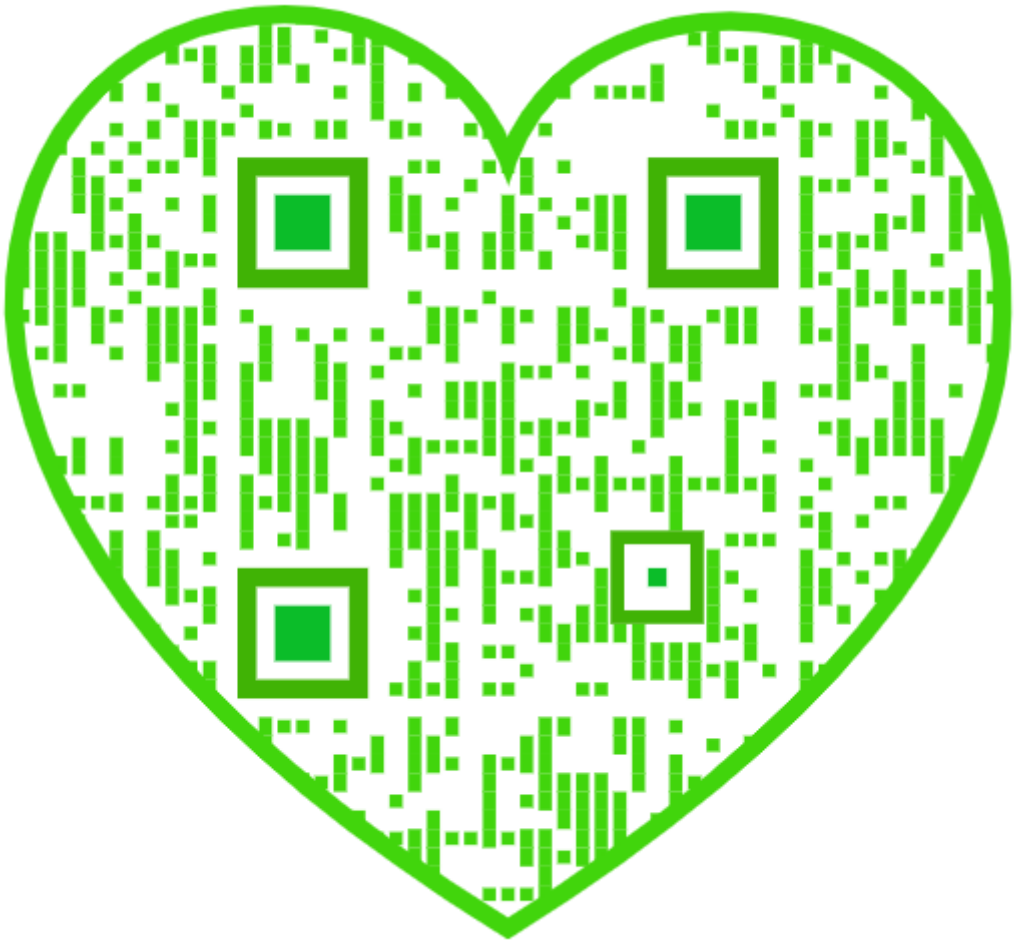

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*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

ROTARY ENGINES—Abraham Andrews, of Bernville, Pa.: I am aware that plungers and revolving steam pistons have been made and used, but I do not claim either of them.

First, I claim the mortised valve, I, and its connection with the rod, K, as operated by the cam wheel, L, in combination with the said axle or shaft.

Second, I claim the arrangement of the plungers, P, with their side rollers, S, and cam wheels, U, in combination with the axle or shaft, B, substantially as described for the purpose set forth.

BRICK MOLDS—Joel W. Andrews, of Norristown, Pa.: I do not claim the combination of two or more molds for bricks in one frame.

But I claim the arrangement of the pivoted handles, D D, links, H H, and bars, F F, connected to movable bottoms, C C, all substantially in the manner and for the purpose set forth.

INVALID'S TABLE—Jonathan M. Allen, of Worcester, Mass.: I claim the combination, in the construction of a table for invalids as set forth, of the revolving table bed or leaf with the column, made adjustable, and capable of being fastened in position substantially as described, the whole constituting a new and useful article of manufacture.

SEED-PLANTERS—John C. Baker, of Mechanicsburgh, Ohio: I claim the arrangement of the wheels, E and C, cams, k l, lever, I, friction roller, n, and disk, a, the whole being constructed as and for the purposes set forth.

MACHINE FOR CROSS-CUT SAWING—Joseph Battin, of Newark, N. J.: I claim the driving pulley, c, of the saw mandrel, in connection with the pulleys, f f', one or both, placed in the carriage, B, and the driving belt, H, the parts being combined and arranged to operate substantially as and for the purpose set forth.

[This improvement relates to that class of sawing machines which are designed for cross-cut sawing. The invention consists in a novel way of applying a driving belt to the saw mandrel, whereby the saw as it rotates may be fed to its work and also gigged back, the saw mandrel being under an equal tension of the belt at all points of the movement of the carriage.]

SEED-PLANTERS—J. C. Benthall, of Oakland, Texas: I claim the arrangement of the rock-shaft, K, connecting rod, J, arm, h, spring, i, and pendant, M, substantially as shown and described, for the purpose of enabling the seed-distributing device to be actuated by the leg of the operator.

[This invention consists in a novel way of arranging the driving or operating parts of a seed-distributing device, whereby the device may be attached to the leg of the attendant, and operated by the natural movement of the attendant while walking along behind the machine.]

AMALGAMATING RIFFLES—J. S. Briggs, of Michigan Bluffs, Cal.: I claim the cup punch, as constructed for saturating wood with quicksilver.

HARNESS ATTACHMENT FOR SUPPORTING DRIVING LINES—T. D. Brown, of Montville, Ohio: I claim as a new article of manufacture an attachment or line-supporter, to be placed on a horse's rump, by securing it to the harness in the manner shown, or in any equivalent way, said attachment consisting of the adjustable strap, A, pin and clasp, B and C, cross piece, D, adjustable standard, F, and arms, G G, the whole arranged and combined as described, and for the purpose set forth.

TRAM-STAFFS FOR FACING MILLSTONES—Thomas Brown, of Kenwood, N. Y.: I claim the arrangement and combination of the supporting ring, A, arranged to rest or lie on the face of the stone with the triangular frame, G, and adjustable staff, M, by which millstones may be faced more accurately and with greater facility, either plain or with suitable concavity or bosom.

HARVESTERS—Charles Brownlich, of Buffalo, N. Y.: I claim the pivoted shoe, E, constructed as described, and connected to the rear end of the frame of the machine by means of the bolt, f, upon which it oscillates, in combination with the levers, g h i, as arranged for the purpose set forth.

CORN HARVESTERS—J. L. Chapman, of Kinmandy, Ill.: I claim, first, The combination with a corn harvester frame, having V-shaped conductors, B, of sickle-shaped revolving cutters, F, partially serrated and partially plain-edged stationary cutters, E, upper and lower horizontal spring guides, C C and D D, and endless apron, J, all arranged and operating substantially as and for purpose set forth.

Second, The partially serrated and partially plain-edged stationary cutters, E, of the form described and shown, in combination with the rotary cutters, F, substantially as and for the purposes set forth.

HARVESTERS—George E. Chenoweth, of Baltimore, Md.: I do not claim a rectangular four-sided step or standard, whether oblong or square, for such have been used before, though without any view to the object sought by my invention.

But I claim a polygonal step having more than four sides, in combination with a standard or post, the lower of which corresponds in figure with the interior of said step, as and for the purpose described.

BEE HIVES—George H. Clarke, of East Washington, N. H.: I do not now claim the hollow bars, D, for the same was secured to me by Letters Patent January 8th, 1856.

But I claim the construction and arrangement of the bars, B B, the same consisting in making each of them with a salient, angular, or sharp or nearly sharp, lower edge or surface, extending lengthwise of it and downward from it, substantially as described and represented, the several bars being arranged at convenient distances for the bees to pass between them or upward into the chambers, A A, as described.

ROTARY SHINGLE MACHINE—Anson Alcott, of Lakeport, N. Y.: I make no claim to any of the parts of the machine, separately considered.

But I claim the combination of guides, c c', springs, d d', connected therewith, slide, o, reciprocated from the movement of the cutter wheel, and the shingle cutter, K, the whole constructed, arranged and operating substantially as described.

SPICE AND COFFEE MILLS—Charles R. Edwards, of Suspension Bridge, N. Y.: I claim the burr, h h, provided with the flame, a a, and handle, cast in one piece, in connection with the concave grinder, having the axle, D, cast upon the same, arranged and constructed substantially as and for the purposes set forth.

HEMMING GUIDES FOR SEWING MACHINES—William Clemmons, of Nicholasville, Ky.: I make no claim to the general construction of the hemmer, or any portion of the devices for forming and turning over the hem.

Neither do I claim forming a recess in its under side to relieve the teeth of the feeder, as this has already been done.

I claim the combination with the hemming attachment of the spring, E, placed in the groove under the pressure pad substantially as described, for the purpose set forth.

SAUSAGE-STUFFER—Henry L. DeZeng, of Geneva, N. Y.: I claim the construction and arrangement of the parts, A D F, substantially in the manner and for the purpose set forth.

WASHING MACHINE—L. A. Dole, of Salem, Ohio: I claim first, The arrangement of two winged rollers with a flexible adjustable apron clothes bed in the particular manner specified, for the purpose set forth.

Second, The use of a flexible apron clothes bed, when made adjustable, substantially as and for the purposes set forth.

Third, The use of an adjustable swinging self-opening and self-closing rubber or leather packed valve or partition, in combination with the adjustable flexible apron bed, substantially as and for the purposes set forth.

SEEDING MACHINE—Carloss and Darwin E. Eggelston, of Beloit, Wis.: We claim first, The arrangement, in the manner and for the purposes described, of the rotating shaft, B, in two or more parts, driving pulleys, d, pulley encasement E, seed pockets, D, stationary perforated bottom piece, a, adjustable slide, F, and cut-offs, h.

Second, In combination with the above I also claim the shipper, G, and adjustable slide bar or gage, g, when the shipper is pivoted to the gage to operate as specified, for the purpose described.

MACHINE FOR BLOWING UNIFORM CURRENTS OF AIR—Jonathan Griffin, of Harpersfield, N. Y.: I claim first, Operating the feeders, F F', alternately by means of the cross arms, E E, with the rollers traversing the curvilinear elevating ways, G G, substantially as set forth.

Second, Regulating the quantity of air admitted into the air chamber, H, according to the quantity required by means of the check wire, f, and sliding arm or brake, b, operating on the balance wheel, K, arranged substantially as described.

Third, Connecting the top and bottom of the air chamber, H, by means of india rubber straps, or other springs, when used in combination with the mechanism for driving the feeders, as described, to overcome and stop the operation of the motive power when the chamber is full, and thereby steady the current of air, and prevent too great strain on the chamber.

LAMPS—Elias J. Hale and Charles H. Chandler, of Foxcroft, Maine: We do not claim a wick-holder operated by a rack and pinion, and serving to hold or carry a wick, as shown in the United States patent No. 14,248.

But we claim our improved rack wick-holder as constructed and applied to the wick and the spur wheel, so that the teeth of the latter may pass through the rack, and act on both the rack and the wick at one and the same time.

Second, The flange or collar, J, for the purpose of equalizing the aerial current as it strikes the flame of the wick.

APPLICATIONS FOR RESTORING THE HAIR—Beverly Harris, of New Orleans, La.: I do not claim the use of castor oil, bay rum, alcohol, or quinine for hair tonics, as I am aware these ingredients have heretofore been used for this purpose.

But I claim the use of bitter apple and gunpowder in combination with the before stated ingredients, when used in substantially the same proportion as set forth, and for the purpose of hair tonics, as described.

REVOLVING FIREARMS—William C. Haynes, of Melrose, Texas: I claim combining with a stationary barrel having several tubes or chambers for shot, a rotating cylinder, having groups of chambers, each group of chambers being so arranged as to correspond with the chambers or tubes in the barrel, and also so arranged in connection with a single cone, or its equivalent, to each group, that the explosion of the cap, or its equivalent, shall fire the whole group to which the cone upon which it was exploded belongs, the whole being constructed and operating substantially as set forth.

MANUFACTURE OF TIN-FOIL—William W. Huse, of Brooklyn, N. Y.: I do not claim to have invented the manufacture of tin-foil with a filling of lead.

But I claim the production of tin-foil having but an outer casing of tin, or its alloy, covering a filling of lead, or its alloy, by the reduction by pressure of a cylindrical bolt of the latter metal or alloy, which has been previously coated by dipping with the former metal or alloy, and the repetition of the dipping at suitable stages of the reducing process, substantially as described.

[This tin-foil is made by giving an outer casing of tin, or an alloy of it, to a filling of lead, or lead alloy.]

APPARATUS FOR DISTILLING—Peter Kessler, of Belleville, Ill.: I claim the employment of the stills, B B, and cooler, Q, in combination with the vessels, E I K, as described and shown, when said vessels are arranged so as to have a tapering space, L, and an intermediate circulating passage, G a b J c, between them, substantially as and for the purposes set forth.

[The gaseous liquor is conducted from the still into a hollow cylindrical space, which is partly filled up by a conical vessel of water, so that the impurities contained in the liquor are condensed by coming in contact with the cool sides of the water vessel, and the pure liquor may be drawn off by a pipe leading to a suitable cooler, the water vessels being so arranged in the space surrounding the same that the strength of the liquor may be determined by the quantity of water contained in the vessel, whilst the impurities may be sent back to the first still by means of a faucet without pumping.]

HARVESTERS—David P. Kinyon, of Raritan, N. J.: I claim the arrangement of the frame, H, which supports the driving wheel, F, so that the adjustment of the relative position of the driving wheel and cutter is effected by the leverage of the inner frame in the manner described, for the purpose as set forth.

[By this invention the hight of the frame can be regulated, and with it the sickle or cutting device, so that grass or grain may be cut at any desired hight from the surface of the ground, without at all interfering with the driving mechanism.]

APPARATUS FOR HEATING BUILDINGS—Lewis W. Leeds, of New York City: I do not claim, broadly, the use of steam as an agent for heating water.

But I claim combining the uses of steam and water for heating buildings, by means of one or more water vessels combined with a separate steam boiler, and applied in such manner that the steam from the said boiler is employed only to heat the water in the said water vessel or vessels, and that the said water vessel or vessels constitute the heater or heaters of the air, as described.

[A notice of this improvement will be found in another column.

HORSE RAKES—F. C. Kneeland, of Hartford, Wis.: I claim the arrangement and combination of the shaft, c', pivoted within the frame, F, and provided with the treddle, G, arms, h, and bar, i, with the frame, F, when the latter is pivoted to the axle, A, all as and for the purpose shown and described.

[A revolving rake is employed in this invention, peculiarly arranged or applied to a mounted frame, whereby a very simple and efficient machine is obtained.]

FASTENING BANDS ON BALES AND PACKAGES—Hazard Knowles, of New York City: I claim the method substantially as described of fastening the ends of a metallic strap or hoop by passing each end of the strap or hoop through a slot in a metal plate, one edge of which slot is formed with a bent lip on the outer face, bending the end of the strap or hoop over and outside of such lip, and hammering or clenching down both the end of the strap and the lip, that the strap or hoop may clasped or held irrespective of the body which is to be strapped or hooped, substantially as described.

BOILER FOR GENERATING STEAM—Joseph G. E. Larned, of Brooklyn, N. Y.: First, I claim the substitution for the parallel or concentric sheets of boiler plate ordinarily used to form the fire-box of steam boilers, of a continuous row or rows of upright water tubes, set side by side, to connect the steam drum or water space above the fire with a water bottom below it, in such way as to form by themselves a water jacket; said tubes being inserted in the sheet above and below by means of necks or smaller continuations, the diameter of which is so much less than that of the tubes as to leave a sufficient thickness of metal between adjacent perforations of the sheet when the tubes are placed near enough together to answer the purpose of enclosure; expressly disclaiming, however, the use of such necks or smaller continuations, in themselves considered, or for any other purpose, or in any other arrangement than that set forth.

Second, The combination of rows of water tubes, set side by side, to enclose the furnace, with tubes arranged annularly, to give increased surface, without reference to the particular method of inserting the enclosing, or arranging the annular tubes.

Third, The method of inserting the innermost of the tubes when arranged in pairs one within the other, as described, so that they may be taken out and put back at pleasure, and without injury, by means of a screw or lock nut joint at one end, and a combined screw and expansion joint at the other.

PUMPS—Edwin Lawrence and Robert Safley, 2nd, of Waterford, N. Y.: We claim a circular reciprocating double-acting pump, that will both raise and propel water on both sides of the cylinder at one and the same time, and by the same motion of the arms or piston, substantially as set forth.

APPLE-CUTTING AND CORING MACHINE—A. F. Ledbetter, of Westminster, N. C.: I do not claim the cutter E, separately, for such device, or its equivalent, has been previously used.

But I claim the cutter, E, attached to the reciprocating frame, C, in connection with the annular opening, i, in the bench, A, and with or without the spout, g, the parts being arranged to operate as and for the purpose set forth.

[This cutter is formed of a tube, with radial knives attached, the cutter being secured to the lower end of a vertical frame or gate, which works directly over a bench in which a circular bed or support, encompassed by an annular opening, is formed, the whole being arranged so that the slices and cores are discharged separately from the machine.]

MACHINE FOR CROZING AND CHAMFERING BARRELS—Hiram Littlejohn, of Troy, N. Y.: I claim crozing and chamfering barrels, kegs, or casks, by turning the bulging cylinders of staves in upon or against suitable rests or supports, and around rotating cutters, which turn in opposite direction, and describe circles of less diameter than the inside of the ends of the cylinders of staves, the cutters and the rests being so arranged together, and one or both of them made movable, that the cylinders of staves can be conveniently applied to and removed from the rests and cutters, substantially as set forth.

HORSE RAKES—William H. Long, of Lancaster, Pa.: I claim the arrangement of lever O, shifting lever plate, N, and tooth beam, B, with axle, A, and regulating screw, L, the whole being constructed and operated as and for the purpose set forth.

PAPER MADE FROM REEDS—Henry Lowe, of Belleville, N. J.: I am aware that reed fiber has been reduced to a sort of pulp; but previous to my invention it has been found impossible, practically, to manufacture paper therefrom.

I do not claim the described process for preparing reed fiber, a patent for the same having been granted me by the United States in 1858.

Nor do I here claim the art of making reed pulp.

I do not limit myself to the described process of making reed paper, or to any other process equivalent thereto.

But I claim the use of reed fiber in making paper, said fiber being prepared from the reeds called *Arundinaria, Macrosperma of Michaux*, and employed in the manufacture of paper, substantially as set forth.

PUMPS—John M. Lunquest, of Griffin, Ga.: I claim the arrangement of cylinders, B B B B, piston heads, C C C C, ball valves, a a a a, air chamber, F, and valves, a' a' a' a', said valves being kept in position by proximity to each other and the sides of the chamber, F, substantially in the manner and for the purpose specified.

CROSSING FOR RAILROADS—Samuel Macferran and Stricland Kneass, of Philadelphia, Pa: We wish it to be understood that we do not claim, broadly, the application of inclined surfaces on railroads for receiving the flanges of the car wheels.

But we claim the employment of inclined surfaces at the point where two rails intersect each other, when the said surfaces are arranged in respect to the intersecting rails, substantially as and for the purpose set forth.

CARRIAGE SPRING—Edward Maynard, of Brooklyn, N. Y.: I claim attaching the returned ends of the spring directly to each other by means of the shackle, b, substantially as and for the purpose specified.

TREATMENT OF CAOUTCHOUC—Morris Mattson, of Boston, Mass.: I do not claim any invention described in the patent of N. Hayward, dated February 24, 1839; and especially I do not claim the combination of caoutchouc and sulphur broadly.

But I claim as my new or improved india rubber composition or manufacture, as made in manner substantially as specified, without any of the oxyd of lead, but of caoutchouc, sulphur, and one or more ochers, or an earth or earths containing one or more finely-divided oxyds of iron, and employed in a quantity much greater than necessary for simply affording color to the compound, the quantity being essentially in the proportions as stated, or such as will afford the economical and useful results as explained.

ROOFING CEMENT—Oscar S. Oaks, of South Rutland, N. Y.: I claim the employment, in combination with the other substances specified, of the alkaline solution of shellac and the sulphate of baryta, the whole being compounded substantially as and in about the proportions set forth.

[This is an improved roofing compound, in which an alkaline solution of shellac is used instead of an alcoholic one; and there are many other novelties which tend to produce an excellent article.]

MOTIVE POWER—John G. Mitchell, of Collington, Md.: I claim the application of weights, A A' and B B' in connection with the shaft, C, and treddle, K, so that when disconnected from the treddle, K, the weights, A A' and B B', are in equilibrio, and subject to be moved by any agency applied to either weight at the end of the lever or arms, so as to produce motion in the machinery at the termination of the machine proper at I, arranged and operating in the manner and for the purpose described.

CONSTRUCTION OF STEAM VESSELS—James Montgomery, of New York City: I claim, first, Constructing the hulls of vessels with one or more cavities in the bottom, commencing at or near the stern, increasing in capacity sternwards, substantially as and for the purposes set forth.

Second, Constructing the bottoms of vessels with corrugations, extending from stem to stern, as set forth, which give strength to the hull, and a portion of which form the cavity or cavities referred to.

Third, The described combination an inclined screw propeller with a hull, constructed as set forth.

Fourth, Two or more rudders operating as set forth, in combination with the described longitudinal cavities in a ship's bottom.

POTATO-DIGGERS—Robert Niven, of Yates, N. Y.: I claim the combination and arrangement of the shoe or share, G, endless screen, H, and pendant or supplementary riddle, N, with the frame, A, and side plates, D, sinuous slots, C, and slotted levers, R, operating conjointly, substantially as and for the purposes set forth.

MACHINE FOR PRINTING THE ADDRESS ON NEWSPAPERS, &C.—A. H. Nordyke, of Richmond, Ind.: I claim, first, The arrangement of an endless conveyor, A, for feeding the envelopes under the forms to receive the impressions, and delivering the same after printing in combination with a driving set wheel, D, as set forth.

Second, I claim the two inclined tracks, K and L, arranged one above the other, in such manner that the forms may be carried up the inclined track, K, and delivered upon the inclined track, L, and brought by their own gravity down said track, and under the pressure rollers, N, and from thence to the point of discharge, as described.

Third, I claim the arrangement and combination of endless band, g, catch, i, and jointed track, K, for taking the forms from the end of said track, K, and delivering them upon the lower track, L, all arranged and operating as described.

GOVERNOR FOR STEAM ENGINES—G. T. Parry and H. W. Evans, of Philadelphia, Pa.: We claim one or more revolving weighted spring levers, K, in combination with the sleeve, I, and the connections described, or their equivalents, between the said sleeve and levers, when the latter are hung to pins placed at such a distance from the center round which they revolve, that the weights at the end of the levers shall move in the arc of a circle, contained within or partially within the circle described by the said pins, as set forth and for the purpose specified.

CHURN—Andrew Patterson, of Birmingham, Pa.: Disclaiming, therefore, all arrangements and devices which are not identical in principle, purpose and mode of operation with those substantially as described—

I claim the combination of the chamber, a, with the chamber, b, when said chamber, b, serves the double purpose of a lid or covering for the cream in chamber, a, and a frame for the dash wheel, driving wheel, and crank, substantially as described and set forth.

SHIPS' PROPELLER—J. K. Peters, of New York City: I claim the arrangement and combination of stops, c d, arm, A, and blade, C, (more than one blade with the stops being combined with the arm, A, when desired,) all substantially as and for the purpose shown and described.

[Mr. Peters' propeller consists of one or more blades or floats attached, each at one end or edge by a flexible joint to an arm, lever, rod, bar or frame, which has imparted to it a reciprocating motion either vertically or in a direction transverse to the length of the vessel, by which motion the blade or float is caused to receive a vibrating motion which causes them to present their opposite faces alternately to the water in a direction oblique to that of the reciprocating motion of the arm, lever, rod, bar or frame to which they are attached and to the length of the vessel, and thereby exert a pressure upon the water in such a way as to propel the vessel.]

LOCK—Daniel Powers, of Philadelphia, Pa.: I claim the independent movable expanding and contracting fence, or its equivalent, substantially as set forth.

I also claim the union of the upper and lower halves thereof, as specified.

CENTER BOARD—Noah Pratt, of Nicholson, Pa.: I claim applying the center board and appliances for operating the same in a movable box or curb which is so fitted into a well-hole, or a stationary curb built into the vessel as to be capable of being lifted out of said well-hole or curb with the center-board, and all its appliances, substantially as described.

[This invention consists in so applying a center-board as to permit it to be adjusted horizontally at an angle in either direction to a plane passing vertically and longitudinally through the center of the vessel, for the purpose of enabling a vessel to sail closer on a wind, and holding her to the wind while in stays. It further consists in providing for the taking-up of the center-board, and placing it on the deck of the vessel for repairs or similar purposes, by applying it within a movable box or curb which is fitted to a well-hole or stationary curb provided in the vessel, and which can be lifted from the well-hole with the center-board and the contrivances for operating it.]

HARVESTERS—Daniel Rauck, of Intercourse, Pa.: I claim the combination of the inclined planes, H, and springs, I, crank, K, and connecting rod, L, spindle or pivot, E, sliding rake head, R, and curved supports, B T and C, when these several parts are arranged in the manner described for the purpose specified.

PLOWS—Isaac Rulofson, of Penn Yan, N. Y.: I claim the arrangement of beam, A, standard, B, landside strip D, share E, moldboard, C, and piece H, the whole being constructed and united as and for the purpose set forth.

SCREW PROPELLER—G. E. Safford, of New York City: I claim the hub, B B, made in two disks, with spiral or inclined slots to receive the floats, when the floats are removably secured to the hub, in the manner described, and the whole being constructed substantially as and for the purpose set forth.

AUTOMATIC BELL RINGER—E. N. Scherr, of Philadelphia, Pa.: I claim the described manner of automatically producing music from bells by the employment of adjustable pins, b, in the barrel, A, actuated by clock-work or other motive power, and giving motion to the hammers, D, in any manner equivalent to that shown and described.

CONSTRUCTING WHARVES—Alexander Stephens, of Baltimore, Md.: I do not claim brace piles, nor the springing of piles into position as new or novel.

But I claim brace piles driven at a suitable angle, and having their heads so drawn back as to secure a purchase from the footing of the pile, when combined with vertical piles and capping logs, substantially as described.

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SMUT MACHINE—D. P. Shaw and F. C. Brown, of Rochester, Ind. : We do not claim a curved blast spout, K, nor do we claim separately any of the parts.

But we claim the arrangement of the blast spouts, K L, with the scouring device enclosed within the cylinder, I, and the fan-box, C, in connection with the tubes, J J, substantially as shown, whereby the grain is subjected to a continual blast during the whole of its passage through the machine, to wit, prior to its advent into the cylinder, I, while being acted upon by the scourer, and after it leaves the scourer, substantially as described.

[This invention consists in the employment of a blast spout, fan and scouring device, arranged relatively with each other, so that a very compact and efficient machine is obtained, the grain being subjected to a blast before entering the scourer, while passing through the same, and also after leaving the scourer just previous to leaving the machine.]

WASHING MACHINE—Wm. N. Slason, of South Reading, Mass. : I claim the arrangement and combination of the squeeze gratings or boards with the reciprocating dasher or washer, or rinsing chamber.

I also claim the application of the separate soap-chamber to the wash or rinsing chamber, in manner and for the purpose set forth.

I also claim the arrangement of the windlass with reference to the box, A, and brake, C, and for the purpose as specified.

WATER WHEELS—Jacob Stear, of Smicksburg, Pa. : I claim the combination of the cylinder, i, inclined ribs, k, and disk, L, with its buckets, L', the whole constructed and operating essentially as described.

HEARTH FOR WORKING AND REFINING IRON—R. D. Stewart and John Christopher, of Digonier, Pa., and Ross Forward, of Somerset, Pa. : We do not wish to be understood as claiming the steam chamber and perforated hearth described of any particular shape or dimensions as applied in the various ways set forth, but claim its application in any shape or size required for the purpose mentioned.

What we specifically claim is, the steam chamber, C, and perforated hearth, B, as in the specifications and dawings described for the uses and purposes set forth.

APPARATUS FOR SLAUGHTERING HOGS—G. W. B. Story, of Carlisle, Pa. : I claim the arrangement of the vertical shafts, E Q, lever, G, and bar, R, with the vertical rotating shaft, N, and the rectangular frame, B C D and O P, the whole being constructed as and for the purpose set forth.

MASHING—N. G. Thorn, of Dayton, Ohio : I claim, first, The perforations in the pipes, e e e, &c., attached to the hollow arms, d d d', or any analogous device, by which water, steam or air is admitted into the mash-tub, in such manner as to distribute it equally, or nearly so, to all parts of the mash.

Second, The spiral agitators, when attached to any revolving machinery for the purpose set forth.

Third, The surface agitators of whatever form when attached to revolving tub s for the purpose set forth.

Fourth, The use of a self-packing joint, applied to mash-tubs when used for the purpose set forth in whatever form it may be constructed.

Fifth, The combination of the surface agitators, with a stationary or revolving blast.

CORN PLANTERS—Amos G. Thompson and A. J. Thompson, of Belleville, Ohio : We claim the arrangement of spiral springs, a a, in combination with cross-bar, E, and straps, o o, for regulating the movement of the plungers, B B, substantially as specified.

MACHINE FOR SCOURING AND HULLING GRAIN—Jos. N. Treadwell, of Readin, Conn. : I claim, in combination with a bed-stone and runner for scouring and hulling grain, the grooves, c, and rasping plates, H I, skirting said grooves, said parts being arranged and operating together substantially as and for the purpose set forth.

SUGAR CANE MILLS—A. Van Trump, of Lancaster, Ohio ; I claim, first, The combination in a sugar cane mill of two or more intermediate small feed rollers, C C, with four or more large crushing rollers, B B, B' B', substantially as and for the purposes set forth.

SKATES—M. Vandenburg, of Newark, N. J., and F. Berry, of Owego, N. Y. : I claim, first, An elastic front to confine the foot to the skate.

Second, Rendering the foot-board adjustable to feet of various widths by constructing it in sections.

PIANOFORTES—George Vogt, of Philadelphia, Pa.: I claim the employment of the described rest and bridge, either separately or combined, when the same are constructed and operating substantially in manner and for the purpose set forth.

WATER METER—A. W. Von Schmidt, of San Francisco, Cal. : I claim combining with the propeller, B, the radial partitions or feathers, k k, and the re-acting shutes, m m, said feathers and shutes being arranged and operating as set forth.

HARVESTERS—Russel Warner, of Brattleboro', Vt. : I claim, first, The circular cutters, q, attached to bars, r, at the lower ends of rotating shafts, k, and having an independent rotating motion given them by means of the gearing, s a.

Second, The combination of the cutters, x, plates, u p, and shafts, k, with or without the sharpeners, a or c, arranged as shown to operate as and for the purpose set forth.

[Horizontal rotating cutters are used in this mower, and the machine placed in front of the team. The invention consists in a peculiar construction and arrangement of the cutting device, whereby it is made to act very efficiently, and with but a moderate application of power ; also, in a peculiar arrangement of the pole, whereby the machine can be turned with much greater ease than usual.]

HORSE RAKES—Wm. H. White, of Garrettsville, N. Y. : I claim the employment of the two levers, A C, when crossed diagonally and pivoted together at d, in combination with the turning rake head, D, frame, C, and seat, B B' substantially as and for the purposes set forth.

PLOWS—J. M. Whitney, of Bolton, Mass. : I claim the arrangement of the hinged arms, C D, adjustable brace, E, and standard, A, with the wheel, H, and plow-beam, G, the whole being constructed for operating substantially as and for the purpose described.

CULTIVATORS—J. M. Whitney, of Bolton, Mass. : I claim the arrangement of the teeth, a, adjustable mold-boards, D, frames, A A', and cross-beam, B, with the branched swivel bar, L, and frame, H, the whole being constructed as and for the purpose described.

GAGE COCK—John E. Wooten, of Philadelphia, Pa. : I claim the arrangement of the tube, A a, in combination with the cam, c, rod, F, and valve, E, for the purpose and in the manner set forth.

VALVE GEAR—A. A. Wood, of New York City : I claim the combinations of the links, D, and E E', attached to the eccentric rod, and arranged with adjusting gear, as described, or in manner equivalent.

MANUFACTURE OF STEEL—F. A. Lohage, of Unna, Prussia, assignor to E. L. Benzon of Boston, Mass. : I claim the new or improved art of manufacturing steel of any desired temper, or hardened according to the various purposes or uses for which the steel may be required, by arresting the decarbonization of the mass of metal in the furnace at certain points or stages thereof, ascertained and recognized by means of certain phenomena, or external indications manifested by the material, substantially as described.

MAKING BOLTS AND RIVETS—J. R. Bassett (assignor to himself and A. E. Bateman), of Cincinnati, Ohio : I claim the die, A A', a a, i i, g' g', f f, and k k, substantially as described for the purposes set forth.

CAST IRON FENCE POST—P. Stewart (assignor to Auchambaugh Brothers), of New Lebanon, N. Y. : I claim, as a new article of manufacture, a cast-iron fence post, constructed with flanges to protect the ends of the fence rails against being split as well as against moisture, substantially in the manner described.

PRECIPITATED SULPHUR—D. E. Paynter (assignor to himself and I. M. Bissell), of Philadelphia, Pa. : I do not claim, broadly, precipitating a boiled solution of sulphuret of calcium.

But I claim manufacturing precipitated sulphur from the ashes resulting from the combustion of gypsum and coal dust, in the manner described and for the purpose specified.

TEMPERING STEEL SPRINGS—James Jenkinson (assignor to himself and F. Mandel), of Williamsburg, N. Y. : I claim arranging the wires, c c, in such a manner that by tying one end of each of the same to one of the arms of the wheel on which the coil is formed, and by extending the ends so tied down to the hub of the wheel, the loose ends of the wire serve to fasten the several rings of the coil substantially as described.

[This is an excellent method of arranging springs for tempering, as it facilitates the process, and prevents accidents.]

MEASURING FAUCET—W. W. Hollman, of Eddyville, Ky. : I claim, first, In combination with a faucet-piece, having an induction and eduction pipe, a receiving and variable chamber, so constructed and arranged. that by partially rotating it within the said faucet-piece, the liquid will be alternately received and discharged through a port or ports, substantially as described.

Second, Making the rod, B, polygonal, when used in combination with the variable measuring chamber and its piston, substantially as described for the purposes set forth.

RE-ISSUES.

WINDOW FASTENER—C. R. Edwards, of Niagara City. Patented July 8, 1856 : I claim the employment of a single shaft, operated internally, and operating externally upon a window blind, when said shaft is made to effect the double purpose of operating both the blind and its slats, and this whether I construct and arrange the hinge and levers in the manner specified or not.

GRINDING MILL—G. Sanford, of Poughkeepsie, N.Y. Patented March 9, 1858 : I claim constructing a grinding mill with flat plates dressed on both sides, having a longitudinal reciprocating vertical and oscillating motion, in combination with flat stationary plates likewise dressed on both sides, the whole constructed and operated substantially as described.

Second, I claim the notched form of the upper edges of the plates, for the purpose of preventing the mill from choking and to facilitate the feeding of the article to be ground between the grinding surfaces.

ADDITIONAL IMPROVEMENTS.

TOOL FOR TENONING SPOKES—J. J. Croy, of Caledonia, Mo. Patented Feb. 3, 1857 : I claim, first, The adjustable gage, D, attached to the tube, A, substantially as and for the purpose set forth.

Second, The employment or use of the temper or set screws, B C, applied to the tube, A, as and for the purpose set forth.

Third, The gages, H, fitted in the bars, F F', of the clamp cutter head, all the above parts being araanged and operating as specified.

LOCKS—H. W. Covert (assignor to M, Briggs), of Rochester, N. Y.: I claim the combination of the disc, D, and centre V, toothed V, teothed or corrugated substantially as represented, for the purpose of fastening them securely together ; but I do not confine myself to any particular size, or shape, or number of teeth, nor to any particular position on the disc or center.

FLY-TRAP—William Riley, of Madison, Miss. Patented April 27, 1858 : I claim the cover or shade, a, the rim or front marked e, and the pan marked p, as described.

DESIGN.

STEREOSCOPE CASE—Alex Beckers, of New York City.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of $5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY,

No. 37 Park-row, New York.

The True Source of Information.

MESSRS. EDITORS—I became a reader of the SCIENTIFIC AMERICAN in 1849, and have carefully perused every number issued since that date. I doubt not there are many others who can say this much. I can also say I am more and more pleased with it. It is invaluable to me; and I regard its influence upon the material interests of the country as superior to that of any other journal now published. I like your criticisms ; they have always seemed to me to be dictated by a candid independence, and bear the impress of reliability—a feature somewhat peculiar in modern journalism. I rejoice in your success ; and I commend your journal to all friends of solid progress as well worthy of their support.

* * *

Cambridge, Mass., March, 1859.

[The above compliment to the SCIENTIFIC AMERICAN is gracefully expressed, and most highly appreciated. When we assumed the management of this paper in 1846, we determined to make it a sound and reliable medium for the propagation of useful information. How far we have succeeded in our endeavors, we must leave the public to decide. The SCIENTIFIC AMERICAN is the only journal of the kind in this country which has met with any success; and since its commencement, we feel safe in asserting that at least twenty pretended rivals have been brought into existence, and expired after the issue of a few numbers. Our circulation has steadily increased from the beginning up to the present time ; and we have special reason to thank our friends for their earnest exertions to aid its circulation.

We intend that the contents of our columns shall be perfectly reliable, so that our readers may know what to depend upon. If we stumble upon Hot-air or Static Pressure Engines, Paine's Gas, Fire Annihilators, or any other discoveries or inventions of doubtful utility, we shall, as heretofore, deal with them as they deserve, and invariably give scientific reasons for our position.

The columns of the SCIENTIFIC AMERICAN are at all times open to contributions from practical men upon the various industrial interests of the country. We invite such communications ; and we only reserve to ourselves the right (which all editors must carefully exercise) to amend or reject them entirely, if, in our judgment, the interests of our readers will be promoted thereby.

The Preservation of, and Season to Cut, Timber.

MESSRS. EDITORS—In your paper of the 5th ult. I noticed an article and your remarks on the time to cut timber. The assertion is correct that July and August are the best months for cutting timber, according to the early or later maturity, south or north. I will endeavor to give an explanation of this : Physiologists inform us that the characteristics of sap are different at the various seasons of the year, and also that the contents of the cells of the wood and buds share in the same change, according to the seasons. Thus we learn that in the Fall, the energies of the tree are used in filling the cells and buds with starch, sugar, &c., which remain there all winter; that by the genial influences of spring these supply the material for the evolution of leaves and twigs, which grow so rapidly in the spring months ; and that, with little interruption, these materials for the formation of woody fiber, leaves, and fruit, are to be found in the sap until the process for the year is completed in July or August, and nature reposes in the full glory of her perfect work.

Researches have proven (and we can easily repeat them) that at nearly every period of the year but this, starch, sugar, &c., can be extracted more or less abundantly, but that at this time neither the sap nor a decoction or infusion of the wood will afford these matters. We are also informed that fermentation is usually the first step towards decay, and that the substances I have mentioned are vastly more susceptible of fermentation than the well-ripened woody fiber; hence, if you can cut timber at a season most free from fermentable substances, you best secure its durability.

Soaking wood for a long time in running water is followed by an increase of durability, owing to the water dissolving and carrying off fermentable matters. Kyanizing or saturating with mineral ingredients of various character prevents fermentation, and thus secures the object.

This subject is one of immense importance to railroad and telegraph companies. My experience in posts is very much in favor of July cut timber from deciduous trees. I am not sure about evergreens. Q. E. D.

Roswell, Ga., March, 1859.

Gas-light Tubes.

MESSRS. EDITORS—I was pleased with a suggestion in your paper not long since in relation to the importance of some provision for the escape of the products of combustion in gas-burners. I suppose that few persons have any suspicion that it is a matter of any consequence. Can you not give some statements in regard to the nature and amount of these products? L. L. P.

Hartford, Conn., March, 1859.

[The products of gas in combustion are carbonic acid and water ; and as a portion of it generally escapes without perfect combustion, it forms carbonic oxyd, which is a deadly poison. The hydrogen of the gas unites with an equal volume of oxygen, and forms water, hence we have water, carbonic acid and oxyd as the products of combustion. It requires eight cubic feet of air for the perfect combustion of one cubic foot of gas ; these produce three feet of carbonic acid. A burner consuming one and a-half cubic feet per hour requires twelve feet of air, and forms four and a-half feet of carbonic acid, two per cent of which, in any atmosphere, renders it unfit for healthy respiration.—EDS.

To make Cooped Hens Lay.

MESSRS. EDITORS—It is pretty well known that hens will not lay, except occasionally, when "cooped up." It should be extensively known that a small daily allowance of raw meat of any kind will restore not only the power to the hen, but the necessity to lay every day, supposing, of course, that the other portion of the food is of the ordinary kind. No fowl lives exclusively on a vegetable diet; and when running at large, domestic fowls will be found searching for insects with great avidity. Those of your farmer readers who are not aware of this fact, may obtain a better supply of eggs by following this advice.

R. H. A.

Produce of Corn in Ancient Times.

The returns of seed sown, as mentioned by ancient authors, are very remarkable. A hundredfold, Varro informs us, was reaped about Garande, in Syria, and Bysacium, in Africa. Pliny adds, that from the last place there were sent to Augustus from his agent, nearly 400 stalks, all from one grain, and also 340 stalks. He says he has seen the soil of this field, "which when dry, the stoutest oxen cannot plow ; but, after rain, I have seen it opened up by a share, drawn by a wretched ass on one side, an old woman on the other." The returns in Italy were much less extraordinary. Varro says, "There were sown on a jugerum four modi (pecks) of beans, five of wheat, six of barley, and 10 of far (maize), more or less, according as the soil is rich or poor. The produce is in some places ten after one, but in others, as in Tuscany, fifteen after one." This, in round numbers, is at the rate of 21 and 32 bushels on an English acre. On the excellent soil of Leontinum, in Sicily, the produce, according to Cicero, was no more than eight to ten for one. In Columella's time, when agriculture had declined, it was still less.

Prizes for Inventions and Discoveries.

The Society of Arts in London offers premiums in gold medals and small sums of money, for the discovery of a substitute for cotton, an incombustible paper for the books of commercial men and bankers, an economic system of railway transit applicable to common roads to connect thinly populated districts with the main lines of railroads, and the introduction of a system of railways for common roads and in the streets of towns.

This latter system is in common use in our American cities, and all that has to be done in England, is just to adopt it. In noticing the daily tumbling, jamming, and cramming of horses in our streets, we really think it would be a decided improvement in point of cleanliness and comfort, to adopt iron horses for stages, could this be done with equal safety and economy ; upon humanitarian principles the change would be a most benevolent one.

THE NICARAGUA CANAL.—The mysterious Frenchman, Monsieur F. Belly, announces in the Paris journals that his organization of the Nicaragua Canal Company is completed ; that the money necessary is secured ; that the vessel has been freighted to carry out the engineering material, and that this vessel, with himself, some of the engineers and clerks—sixty persons in all—will sail from Havre for Greytown in three weeks. We have no doubt that this energetic personage will get his stomach full of this job before he has been in Greytown three weeks.

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New Inventions.

Substitute for Black Lead.

R. Hicks, of London, has recently invented a composition which is an excellent substitute for the black lead of commerce, either for crucibles or pencils. The following is the method of manufacture :—

Mix together eight parts of black schist, eight parts of the carburet of iron, five parts of plumbago of commerce, one part of soda, and one part of lampblack, the whole of these ingredients having been reduced to a fine powder and sifted.

When the composition is to be used in making crucibles, furnaces, and stoves, instead of black lead, take eight parts of black schist, two parts of the carburet of iron, two parts of plumbago of commerce—all in the state of powder—and mix them together, and proceed as if black lead were being used in lieu of the composition, in the ordinary method of manufacturing such like commodities.

When the composition is used in lieu of black lead in making pencils, it is formed as follows:—Take two parts of black schist, two parts of the carburet of iron, and eight parts the plumbago of commerce, all of which have been previously reduced to a fine powder, and mix them thoroughly together with a small quantity of water (say 1-14th part of water), and then put the mixture thus made into a strong metallic mold, and subject it to considerable pressure in a hydraulic press, or otherwise. The composition, by this means, is consolidated into a block, resembling a piece of solid metal; it is afterwards sawed into slabs of a proper size for making pencils, and baked in a kiln or oven, heated gradually and sufficiently, and retained there long enough to harden to any degree required. This part of the process is well known to the to the manufacturers of black lead for pencils.

Rope-Serving Machine.

Seamen spend much of their leisure time, and riggers work pretty hard, in covering a cable of rope with spun-yarn, and this is called "serving" rope. Sometimes a thinner cord than the strands of which a rope is composed is run spirally round the rope in the recess between the strands, and the process of doing this is called "worming." Again the rope is occasionally covered with strips of canvas dipped in tar before being "served" and this is called "parceling." The standing rigging of ships is generally covered in this manner to protect it from dampness and keep the strain on the masts equal and unchanging. The subject of our illustration is a machine for this purpose, which will perform the work well and with great rapidity; it was invented by P. McLaughlin, of Rockport, Me., and patented May 18, 1858. We will first describe the method of "worming."

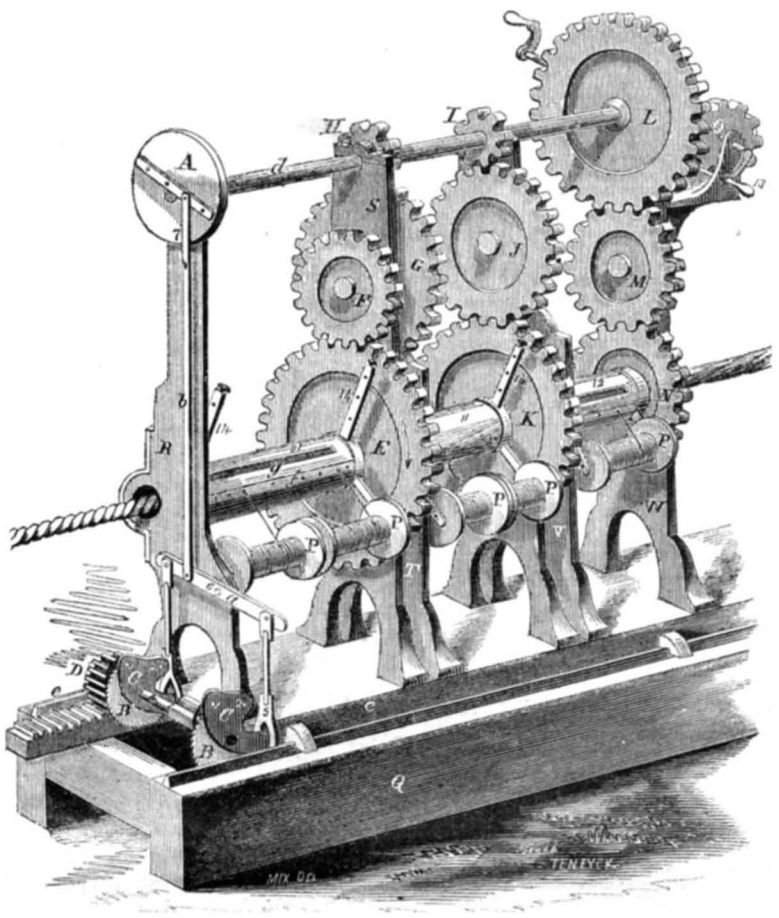
The mallet, 01, has a hollow shaft through which the rope passes, the shaft being secured to the posts, R S, and it has secured to it the cogged wheel, E, that gears with F attached to G. G is moved by H upon the shaft, *d*. From 01 project stanchions, 14, to hold the spools, P, of spun-yarn, which is led through the holes in the bar, *f*, and thence through a "set" that fits into the slot, *g*, it then passes out of the mallet and is fastened to the rope between the posts, S and T, each yarn in its proper lay. As the carriage progresses, the wheel, E, is turned in the direction of the arrow, and the mallet, 01, is carried round the rope and the yarns are laid in their several strands in a regular manner and the rope is "wormed." The "worming" can be laid in tight or slack by screws on the axles of P to cause them to turn either hard or easy as the case may be.

The "parceling" is next performed. Between the uprights, T and V, a mallet, 11, is placed, the hollow shaft of which has its bearings in these uprights and carries the cog-wheel, K, that gears with J, receiving motion by I from the shaft, *d*. The mallet, 11 has a slot in it, through which it receives the "parceling" from a spool. The "parceling" is put on the rope properly by passing over and under diagonal bars at the side of the slot, and as the carriage progresses the rope is "parceled" either tight or slack and with a greater or smaller lap as desired.

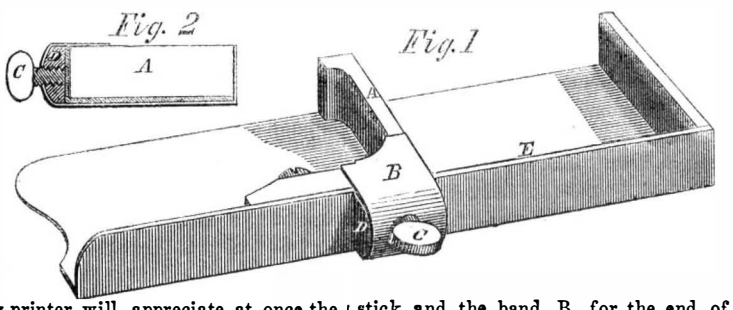
The rope is next "served" by a mallet, 12, that is secured between the uprights, V and W, and that carries the gear wheel, N, which is operated from L on *d* by the wheel, M, and with the exception of a difference of speed, the whole arrangement is the same as for "worming." The machine can be operated by bevel gear, O, and handle, 13, or by power as desired. The speed of the machine along the rope is regulated by the wheel, A, on the end of *d*; a bar, *b*, is attached to A by a pivot, 7, and as that is moved further from or nearer to the center of A, the stroke of the rocker, 6, and bars, 5, 5, will be lengthened or shortened and the number of ratchet teeth on the wheel, B, taken by the ratchets, C, will be correspondingly altered, and the progress of the driving cog, D, upon the stationary rack accelerated or retarded. The machine moves on guides, *e*, on the ways, Q. The three separate and distinct operations are here performed consecutively, and with a regularity and speed unattainable by hand.

The inventor desires to dispose of the patent and any further information can be obtained by addressing him as above.

McLAUGHLIN'S MACHINE FOR SERVING ROPE.



CALHOUN'S COMPOSING STICK.



Every printer will appreciate at once the merits of the invention that is the subject of this illustration; and as none but printers are likely to be interested, we will at once proceed to desoribe it.

Fig. 1 is a perspective view, and Fig. 2 a section of the invention. Alexander Calhoun, of Hartford, Conn., is the inventor.

The general construction of this composing stick frame is of the well known and customary form, and of various sizes. The sliding knee bracket, A, is also of similar shape to a variety of others. The improvement is in the application of the sliding band, B, which passes from the front part of the bracket, A, under the bottom and up the back, and folds over the top edge of the frame, the whole forming one combined freely-sliding guide and knee bracket, regulated and adjusted by the thumb screw, C, in the back. A plate or gib, D, is placed between the back of the stick and the band, B, for the end of the thumb screw, C, to press on in tightening and adjusting the bracket, allowing the whole to work and slide easily and frely.

The utility of the invention consists in the remedy for the imperfections of the usual sliding knee bracket, which has always been a source of annoyance to good printers, viz., when the space is filled with the type, the pressure of the increasing upper lines causes the bracket to spring back out of a right angle, making the last lines "set," continually increasing a trifle longer than the first ones, by the yielding and spring of the thin bottom of the frame edge, E, thus making it impossible for a printer to make good work and square.

The band, B, by passing up and lapping over the top edge, in the manner shown and described, is an effectual bar to the upper part of the bracket, A, from springing back out of a right angle, and with no detriment whatever to the sliding, but rather an improvement. Another benefit also arising out of this method is that the frame, E, may be lighter and thinner—an essential consideration to printers on long work, and at all times.

The patent is dated August 31, 1858, and any further information can be had from the sole agent, E. R. Webb, dealer in printers' materials, corner of Dutch and Fulton streets, New York.

The Aneroid Barometer.

The mercurial barometer must be, at least, 33 inches long, and this is, as every one can perceive, a great inconvenience, and moreover it must always be kept perfectly upright and motionless, besides which it is often open to certain objections only appreciated by persons who make regular observations. The professor of the ærostatical school at Meudon near Paris—M. Conté—feeling that some more simple and compact form was wanted, invented the aneroid barometer, which is a small metallic case from which the air has been withdrawn and which is kept at a proper state of distension by springs inside. As the atmosphere becomes lighter or denser the size of the box differs, and this difference is indicated by a hand upon a dial-plate. This special kind of aneroid barometer has given way to improved forms, and although we believe that the Smithsonian Institution does not approve of them, yet there is a great number of excellent observers who state that they are quite as reliable as the old mercurial barometers. E. Kendall, of Great Barrington, Mass., manufactures a very neat little aneroid, three inches in diameter and one and a half deep, It is perfectly reliable, and can be depended on in situations where the mercurial would beuseless, and, moreover, they are very cheap, the price being only $10. We have great pleasure in publishing this article as we wish to see them in more general use than they are at present.

Church Heated with Gas.

A church in Dundee, Scotland, is heated by gas, and the application, it is stated, gives great satisfaction. Several jets of gas are enclosed in copper boxes, situated in different parts of the church, and when ignited, the metal radiates and reflects the heat in the same manner as a common stove. This method of heating churches is very convenient and cleanly, but not economical, we think, except where gas is furnished at a very low rate. We understand that its price in Dundee is not half so much as it is in New York. For heating buildings and cooking, gas would be a grand desideratum in all cities. In Pittsburg Pa., where it is furnished so cheap, we think it ought to be adapted generally for such purposes.

American Agricultural Implements Abroad.

At a late Smithfield Club Show of agricultural implements in England, Messrs. Burgess & Key exhibited one of Allen's American reapers, which was much admired. It had been thoroughly tested during the last season, having cut 183 acres of grass and 20 acres of clover at the rate of an acre per hour, and did its work much better than could have been performed with a scythe.

The term of the present Congress expired on the 4th inst., without taking action upon the patent bill reported at the last session. We publish this fact with some humiliation, but it is nothing more than we expected. The trouble is, our Patent Committees are not properly constituted.

A waterproof packing paper has just been brought into use in England. It consists of common paper covered with a very thin coat of gutta percha, this substance is dissolved in turpentine, then put on the paper in a liquid form with rollers.

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Scientific American.

NEW YORK, MARCH 12, 1859.

REMOVAL.

The SCIENTIFIC AMERICAN *Office has removed from its old location,* 128 *Fulton st. (Sun Building), to No.* 37 *Park Row (Park Building), where all letters, packages, and models should hereafter be addressed. Entrance is had to the office also at No.* 145 *Nassau st. Munn & Co.'s American and European Patent Agency is at the above office.*

Floods—Embanking Rivers.

Most rivers are subject to annual swellings and depressions. The cause of this is the melting of snows near their sources, and the falling of periodic rains, succeeded by seasons of comparative dryness. The floods come down charged with loose soil, and spread over an extensive area beyond the natural beds of the rivers, and on retiring within their channels deposit much of their alluvial matter. In the course of centuries, these deposits form those deltas on the river banks, which are distinguished for agricultural fertility. The annual freshets, however, to which overflowing rivers are subject render their deltas uninhabitable, unless protected by embankments for keeping out the waters. The fertility of the low lands on river banks was known at an early date in the history of man, and means were devised by the ancients in Egypt and Assyria for reclaiming them from the floods, and rendering them adapted for supplying nations with waving fields of golden grain. The art of river embanking, or leveeing, as it is more generally called among us, found its way into Europe from the East, and it has attracted much attention in our own country, especially in the Southwest, where the richness of the "Mississippi bottoms" is proverbial. A work on this subject, by William Hewson, civil engineer, has just been published by John J. Reed, Center street, this city, and from a perusal of it, we are satisfied that the author is acquainted with his subject both scientifically and practically.

Two causes, he states, operate to produce floods; one is the irregularities of river beds—the other, irregularity in rain-falls. The former are within the fields of human effort to counteract, and therefore form a special subject of inquiry. He also states that rivers decrease in the rate of their descent as they approach their outfall. Thus the average fall of the Mississippi river for the whole distance from the confluence of the Ohio to the Gulf of Mexico is about three inches per mile, but if the channel were straight, the uniform descent would be about six inches. During a flood, this river rises to 50 feet at Cairo, Illinois; 42½ feet at Friar's Point, Miss., and only twelve feet at New Orleans, thus showing a very great difference in the declension of rise, as the river passes downward.

It has been asserted by some writers that one river may absorb another of equal magnitude with itself, without producing a rise of its surface; and Cressy, in his "Encyclopædia of Engineering," takes this ground, asserting that the Tiber, in Italy, swallows up the Teverone without becoming deeper or wider. Of course, if this were the case, there must be the production of a double velocity in the waters. Mr. Hewson states that Cressy and Eytelwein, who have made such statements, are mistaken regarding the depth. The Mississippi is contracted below its junction with the Ohio, and it really grows narrower as it flows on after swallowing up all the great rivers that flow into it. It is a mile wide at Cairo, Ill.; at New Orleans, it is only half a mile wide. This is rather a remarkable circumstance, but our author explains the cause. The Mississippi, as it grows narrower, becomes much deeper, and as a consequence, having less resistance, its velocity is much increased. As a practical application of this conclusion, in the case of the Mississippi river, Mr. Hewson says, "it may be therefore safely affirmed that the retention of flood water in the channel by levees, like all tributary accessions to its volume, while deepening the channel and increasing the velocity, will not, as a direct consequence, elevate the surface of the water." This is a very important conclusion; one which, he states, appears to be paradoxical, "but is drawn fairly from undoubted premises." This is certainly a most interesting question, because if this conclusion is correct—and it appears to be so—a wide field is here opened up for the profitable reclamation of many vast marshes along river banks, and the conversion of them into fruitful fields.

But there is another result of still greater importance than this connected with embanking rivers. This is no less than the growth of the lands or reclaimed deltas. Thus, by raising levees on the Mississippi, the bottom lands have been greatly increased in amount—no less than 96 feet per annum. The unleveed portion of the Po, in Italy, showed an annual increase of only twenty-two feet of delta, but since it has been embanked throughout, it has gradually increased to 229 feet annually not that the ground has grown in hight, but the dry land has increased in extent. In England and Scotland, the embankment of rivers has produced wonderful results. By increasing the velocity of the volume of the rivers, their beds have been scoured out, and the channels deepened during floods, so that these very levees have also operated to produce a drainage effect upon the adjacent low lands during low water. Here is a fact worthy of the attention of those who would engage in reclaiming the rich delta lands on our Western rivers by erecting strong levees.

The method of constructing river embankments is ably treated by Mr. Hewson. He urges the utmost care upon all engaged in this branch of engineering, in the erection of good foundations and solid embankments in the first place, which is certainly very important. Our object is to direct attention to the benefits which may be secured by levees in certain situations, and to the engineering science and practice connected with it.

Treating Flax.

No fabric is more beautiful than linen. For garments and drapery it had always the very highest place among rich and poor. Flax is unequalled for variety of texture, as it is made into huge cables capable of bridling a ship of war, and into threads more attenuated than those of a spider's web, for the manufacture of Belgian lace. The finer qualities of linen are very costly, and the coarser kinds much more so than cotton. This is owing to the processes, through which flax is required to pass, to render it fit for those operations which separate the fibrous from the woody matter. "Fine linen, clean and white" is a term used in Scripture to denote a chaste and beautiful appearance, and assuredly there is no more beautiful fabric than fine white linen. It is rather remarkable that, although we have millions of acres in America of the finest soil for growing flax, we do not raise any worthy to be compared with that of Russia, Holland or Tuscany, and there is not a single yard of fine linen, so far as we know, manufactured from one end of our country to the other. This is not very creditable to us, because this question is one which is as old as the establishment of our first colonies. We know that good linen may be made from American flax, because we have seen some home-made shirting made from it which was nearly as fine as the common imported qualities. A linen factory was established at Fall River, Mass., a few years since, but we have not yet seen any of its productions in the market, although thousands of yards of foreign qualities are sold daily.

Some valuable discoveries in the preparation of flax we hope will yet be made, so as to cause a complete revolution in this branch of the manufacturing arts. This was expected from the flax-cotton of Claussen, about which so much was said a few years since, but it turned out a delusion. From this, however, we have no reason to conclude that new improvements cannot be made; on the contrary, the field is more inviting than ever to the experimenter.

An improvement in this department of the arts has recently been patented in England by J. J. Cregeen, of Rotherhithe, which appears to be a move in the right direction, and may lead to important results. It is applicable to the treatment of jute, hemp, China grass, flax, and all the fibrous vegetable stalks which contain resin or gluten. He first steeps them in hot water of 120° Fah. for forty-eight hours, after which they are washed in warm water, and during the operation are continually passed between fluted rolls. Subsequent to this they are crushed between large rollers that have blunt teeth on their circumference, by which action the woody matter is entirely broken, but the fibrous uninjured. After this operation, the flax is dried, and the shive, or woody substance, is easily driven off by a slight scutching in connection with a fan blast. The flax is next steeped in a tank filled with half-formed soap composed of oil and a solution of ammonia. This steeping process lasts for about twelve hours, the heat of the liquor being maintained at 90° Fah. The flax is now taken out dripped, and again washed in hot water in a tank, during which operation it is also kept passing between fluted rolls until it is quite clean. By this treatment very little tow is made, the fiber is preserved in full length, and is very glossy and of a silky appearance. Jute and some other kinds of flax cannot be spun without being soaped, and a preparation of oil and soda is sprinkled upon it for this purpose, but no steeping takes place in such a liquid, as by the process described. No doubt the steeping in the hot liquors, and then in the saponacious one, is troublesome and expensive, but it is asserted that the finer qualities of yarn can thus be made from almost all kinds of vegetable fiber.

Young's Coal Oil Patent.

The remarks with which we accompanied the publication of Young's patent, on page 186 of the present volume of the SCIENTIFIC AMERICAN, have caused considerable commotion among many who are interested in the manufacture of coal oils. We stated that the patent seemed to cover the manufacture of oils from coals and such like mineral substances by distillation, and that unless it could be proven that some other person had made the discovery prior to the patentee, it would be sustained. We have received a communication this week from Washington, which points out how "the patent may be broken down" (we copy this expression from the letter of our correspondent) upon another principle, namely, the non-fulfilment of the conditions embraced in the 15th section of the Patent Law of 1836. This provides that the patentee, if an alien, must put and continue his invention or discovery on sale to the public on reasonable terms, eighteen months (or earlier if he chooses) after the patent is issued; and failing to do so, it becomes invalid. If Mr. Young has not complied with this provision of the Patent Law, of course, his patent has become forfeited to the public.

We have no information upon this important point, but should it prove that Mr. Young has failed to introduce his improvement in accordance with the provision of the law above cited, it will afford another illustration of the severity of our miserable system of discriminating between foreign inventors and our own citizens.

Colored gelatine is a very good substitute for glass to make illumination lamps and the like, and it can be molded into any form.

New Steel Wire.

Of late great improvements have been made in the production of iron and steel in England, and wire has in its turn been greatly improved, both in the quality of the stock employed, and the processes of manufacture. The British Admiralty, by fixing a standard for their cable, first led the inventors of that country to improve the quality of wire, and when the makers began to vie with each other the standard was soon left behind and much greater excellence attained. The latest and greatest improvement is the patent steel wire of Messrs. Webster & Horsfall, of Birmingham, of which we are favored with some particulars by Mr. Nunn, their agent in this city. He, himself, has been for many years a wire-maker, and knowing, as he does, the various qualities in the market, his decided opinion as to its superiority is worth a great deal among those who use this article. The *Icarus*, *Pandora*, and *Melpomene*, three steam frigates of the largest class in her Majesty's navy are being rigged with it, and the British Admiralty Report endorses its great strength and especial applicability to the manufacture of rope cable or rigging. We find that it takes 2,800 pounds to break a No. 10 patent steel wire, while the same gage iron wire breaks with 800 or 900 pounds; a No. 16 patent steel wire is broken with 1,100 pounds, and the same gage iron wire is broken with a strain of 300 pounds. Thus a steel wire need only be one-third as heavy and bulky to bear the strain of iron, and this lightness will extend its application to rigging and mining purposes.

The comparative strengths of new steel wire and hemp, when made into cable, will be seen at a glance by the following table of the relative diameters of the same strength made from actual experiments:—

Steel Wire Rope.	*Hemp Rope.*
5 inches	14
4¾	13
3½	12
3	11
2¾	9
2	6½
2½	5½

We are glad to say that it has been introduced into this country by Mr. Nunn, and at every trial has proved to be an invention of great importance.

Indian Improvements.

While Britain's soldiers are busy reconquering India, her engineers are not idle. Roads, aqueducts, and railways are everywhere progressing and steamboats of light draft are advancing on the waters of her most sacred rivers. A steam ferry is to be established on the Indus at Attock and there will soon be more. A railway bridge over the Jumna, built of stone and iron, is about to be constructed and it will be a great work, when finished. The following are some details on the subject.

The length of the bridge between the abutments is 3,224 feet, the number of openings, 15, the distance from center to center of the piers, 219 feet, and the depth of the bottom of the foundations below low water level, 50 feet. The railway will be 81 feet above low water level.

This is a new aspect in the history of war, to conquer first, then plant—not your standard—but the steam engine, and leave it to work out that truer victory which is gained by the supremacy of the arts of peace.

Dreadful Steamboat Explosion.

On the 27th ult., the most dreadful explosion which has taken place on the Mississippi since the new steamboat law went into force occurred near Baton Rouge, by which two hundred persons, it is reported, lost their lives. The steamboat was the *Princess*, bound to New Orleans, from Vicksburg. Correct accounts have not yet been obtained regarding the cause of the explosion, but it was no doubt owing to an overpressure of steam, and too little water in the boilers. Most of those who lost their lives were ladies. This boat was considered one of the finest on the river.

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Mourning Customs.

A French writer gives a summary of the different observances among mankind, relative to mourning and funeral ceremonies, which we think will interest our readers. All the world, says he, are acquainted with the grandeur of the Roman obsequies and funeral games. The Greeks also burnt the corpses of distinguished men, with funeral feasts, and the lamentation of hired weepers, though they generally displayed a less sumptuous grief, and better regulated piety. The Persians buried the bodies of the dead; the Scythians ate them; the Indians enveloped them, for preservation's sake, in a sort of locker; the Egyptians embalmed and dried them, exhibited them on festal days, placed them at the table among their guests, guarded them as their most precious possessions, and loaned and borrowed money on these strange pledges. In our time, the custom of dancing at funerals is only practised in India and among some savage nations; but funeral entertainments still prevail in many European countries. Amongst others the ceremony of interment is solemn and silent, which nevertheless does not interfere with the wish that all may be forgotten as speedily as possible. We observe more ostentatious rites for persons of consequence. Their carriages follow them to the graves, and sometimes their horses are paraded, which having been made to fast seem to partake of the affliction of the occasion. The Orientals, from whom we borrow this custom, went further—they made the horses in funeral processions weep, by blowing a particular kind of powder up their nostrils.

In Italy the mourning was formerly white for women, and brown for men. In China it is white; in Turkey, Syria, and Armenia it is blue; in Egypt, yellow; in Ethiopia, grey. Each of these colors had, originally, its mystical signification. White is the emblem of purity; celestial blue indicates the space where the soul ranges after death; yellow, or the tinge of dead leaves, exhibits death as the end of all human hopes, and man falling like the leaf of autumn; grey represents the color of the earth, our common mother; and black, the funeral costume now adopted throughout Europe and America, is an allusion to the eternal night.

In England, the sovereign never wears black; he is clothed in dark purple as mourning. Till the reign of Charles VIII, white was the funeral garb in France. The Emperor Leopold, who died in 1705, used to suffer his beard to grow in disorder during the whole period of mourning. In this he imitated the Jews. The dowager-empresses never left off weeds, and their apartments were hung with black till their death.

The Chancellor of France is the only person who never wears mourning. The brothers, nephews, and cousins of Popes never wear it; the happiness of having a Pope in the family is too great to allow them to be affected even by his death.

But the most remarkable of all these usages, is, perhaps, that of the people of those ancient nations, who dressed themselves as women when they lost their relatives, in order, it is said, that the ridicule attached to their vestments might make them ashamed of their grief.

The Gorilla—A Natural Curiosity.

In Africa there is a tribe of huge monkeys known by the name of Gorillas. Their existence has been known to white men for some years, but none have ever been taken alive. They generally live in the lonely retired seclusions of the forests and the males are capable of coping in fight with the lion. The skull of one is in the Boston Museum, being sent thither from Africa, by the Rev. Mr. Wilson, a missionary. Last year, the body of one was sent from Sierra Leone to Professor Owen and was packed in a cask of rum. When opened, the body was found to be partially decomposed, but it was taken out to the fields and has been restored and fitted for its place among the other African quadrumana specimens in the museum. The males of the gorillas, have a horrible appearance; they attain to a stature of five feet, with wrists four times the size of a man's; hands double the size, and they are three feet broad across the shoulders. Their strength is prodigious; one can wrench the head off a man with his hands as easily as a person can husk an ear of corn. Its teeth and jaws are as powerful as those of a tiger, as one has been known to bite through a gun-barrel, as if it were a stalk of cane. They feed on vegetables, principally nuts and sugar cane, and are covered with a coat of black hair. The negroes live in considerable terror of them, and well they may, as they are perfectly fearless and very fierce. The specimen which has just been added to the British Museum is the most interesting natural curiosity which has been secured for a great number of years.

Browning Gun Barrels.

The London *Artisan* contains the following directions for browning gun barrels, stated to be those practised at the Government small arms factory, and by "the most celebrated barrel-browners in London and Birmingham":—

"The barrels must be clean and bright, and entirely free from grease, to effect which they are rubbed with pounded lime. They are then rubbed with the following mixture: 6 oz. spirits of wine, 6 oz. tincture of steel, 2 oz. corrosive sublimate, 6 oz. sweet spirits of niter, and 3 oz. nitric acid. When rubbed with this they are placed in a warm room for twelve hours, after which they are brushed. Another similar application is now made, when they are laid aside for six hours longer, after which they are again rubbed with a scratch-brush, and so on for five days the operation is repeated. The barrels are then placed in boiling water, afterwards rubbed dry, and while still warm are rubbed over with sweet oil. The operation of browning should be performed in a dry room heated to 70° Fah."

Simple nitric acid and a little alcohol will answer the same purposes, we believe, as the above mixture. We present this in addition to what we have recently given on this subject, so that our readers may try the experiments, and prove which are the best methods.

Effect of Climate on Nations.

It is certain that excessively hot climates are unfavorable to the population, wealth, civilization, refinement and general prosperity of nations; for although the tropical zone abounds with delicious fruits and other aliments, it is deluged with rains for six months, attended with dreadful hurricanes, and also parched with drouth during the remainder of the year; while the frequency of earthquakes and volcanic eruptions cause the overthrow of many cities and the destruction of many thousand lives, not to mention the pestilential character of the atmosphere. Such is the deleterious influence of the torrid zone on the growth of population, that in the vast continent of Africa it does not exceed 57,000,000, or if we take the estimate of Balbi, 60,000,000, on a territory of 11,000,000 square miles, a large proporton of which is found above north lattitude 30 degrees, where the mean temperature of the year varies from 78 to 98 degrees, and where considerable advances have been made in wealth, civilization, arts, sciences and social improvements, as in ancient Egypt, Carthage, and other Phœnician states.—*Metcalf on Caloric.*

A Case of Illness.

A man was taken suddenly ill a short time ago, and the only cause he could suggest was some elder wine he had been drinking. The wine was examined, and was found to contain large quantities of zinc, having been boiled in an iron boiler that had been "galvanized" or zinced. All persons should be cautious not to place any substance containing an acid in any zinc vessel, as it will dissolve, and it is extremely pernicious.

Improved Heating Arrangement.

The heating of buildings by water, while it possesses many advantages over other methods, has still a sufficient number of disadvantages to prevent it coming into general use; and the same may be said of steam. L. W. Leeds, of this city, by a patent obtained this week, proposes to combine the advantages of both systems without having the defects of either, and to heat houses, public buildings, streets, or even cities, in a simple and economical manner. He places water chambers of any proper construction, and provided with air flues, in such a position as to supply a current of hot air to the room or house when the water in the chamber is warmed; and this he warms by steam generated in a boiler at any distance from the water chamber, the steam being conveyed from one to the other by pipes. By this means, one boiler may be made to heat a street or more, by passing the steam through the water chambers in the different houses, and the temperature is always under perfect control.

Feeding Coals to Fires.

The common method of feeding coal to fires in stoves, grates, and furnaces, is by placing the fresh fuel on the top of that which is red-hot. The very opposite method, namely, feeding the coal underneath by Delano's improvement, has been introduced at the Iron Works of Messrs. Corning & Winslow, at Troy, N. Y., and has effected a saving of about twenty per cent in fuel, with the production of a superior quality of iron. The patents for this improvement were secured in Europe through the Scientific American Patent Agency; and as a valuable and profitable invention it deserves the attention of all those engaged in the iron manufacture. By feeding the coals to the fire in this manner, the grate bars are kept clean and free; less power is thereby required to operate the blast, and the furnace can be run for a much longer period.

Cracks in Bells.

A correspondent of the London *Builder* gives some very valuable advice about bells. He advises that they should be occasionally examined, to observe how much the bell is worn at the places struck by the hammer. If a considerable indentation has been made, the bell should be re-hung, and turned a quarter round, to present a fresh surface to the action of the clapper. Some good bells have become cracked without any extra or violent use, by being worn only at two points. The cost for turning the bell to prevent its cracking from such a cause, is very trifling in comparison with re-casting a cracked bell.

Barbarous Sanitary Law.

When the plague was in Edinburgh, in the autumn of 1569, the "Good Regent" (Moray) ordered that every family in which it appeared should remove their sick to the Boroughmuir, under penalty of death, and actually hanged one tender-hearted husband for concealing the fact that his wife was attacked with the pestilence, and nursing her in his house instead of sending her forth to perish miserably amongst the rest of the unsheltered victims of this barbarous sanitary law.

THE BREECH-LOADING RIFLE CANNON.—The rifled cannon in England, which has recently sent shot crushing through their iron floating batteries as if they were pasteboard, is the invention of Mr. R. Armstrong, of Newcastle, England. It is made of a compound of steel and iron. The interior is steel, this is surrounded by wrought iron twisted in a spiral form like the stub and twist barrels of fowling pieces. Its strength is so great that it easily projects an 18-pounder elongated shot, and yet it weighs no more than an ordinary 9-pounder

Humboldt answers 2,500 letters annually, and these form only a portion of the number he receives.

Notes and Queries

*** PERSONS who write to us expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

WE are unable to supply several numbers of this volume; therefore, when our subscribers order missing numbers and do not receive them promptly, they may reasonably conclude that we cannot supply them.

G. L. M., of Mass.—Silver is placed on brass by a solution of cyanide of silver and one of Smee's electric batteries. You can also silver brass by a powder composed of precipitated silver powder mixed with two parts of cream of tartar and common salt. It is rubbed on the brass with a piece of leather moistened with water. After it is silvered over, wash it in warm water, and wipe dry with a soft cloth.

J. F., of Vt.—Hydraulic cement is excellent for aqueducts and cisterns; indeed, there is no other so suitable for such purpose. Soluble glass would not be of the least benefit to mix with it. There are no objections to the use of good hydraulic cement, as it is durable and safe.

G. W., of Mass.—The only remedy for your kettle is to have it tinned or enameled inside. Had the iron been good at first it would not have rusted so soon.

W. J., of Mass.—Sal-ammoniac is the substance used in galvanizing iron with zinc. You will find the process described on page 269, Vol. XII, SCI. AM.

R. O. B., of Maine.—"Dick's Practical Astronomer" treats of the manufacture of telescopes, and contains the information you want. Large object glasses are costly, and those of first-rate quality are few and far between. We do not know their prices.

H. A. F., of N. Y.—You are perfectly right, there are ores of gold; and again, you are wrong, for gold is a simple element. We believe that every book on chemistry mentions the fact that gold can be crystallized by the use of nitric acid. From the style of your letter we suspect you are rather fond of alchemy. We should advise you to give it up, and read some good recent works on pure chemistry.

G. A. W., of Vt.—A license from a patentee to sell his invention in any State does not exempt you from the license laws of the States in which you sell. Each State is sovereign in itself, and has the power to regulate the mode in which articles shall be sold within its jurisdiction.

R. A. W., of Md.—The American Condensing Steam Engine, published by us some years since, is out of print.

H. B. M., of N. Y.—The work to which you refer, by Colburn and Holly, is published by Wiley & Halstead, 351 Broadway, this city. We believe it is a good work.

L. T. S., of Ohio.—A minor can obtain a patent in his own name. In transferring it to another, however, it would be necessary for the father or guardian to give a signed consent to the transfer, otherwise the sale would not be legal.

N. D., of K. T.—The machine on exhibition at Barnum's Museum is supposed by many to be a perpetual motion, but it is not. It is, however, very skillfully constructed, and the secret of action is difficult of discovery. Glass can be cemented with a composition of isinglass dissolved in mastic varnish.

M. K., of Mass.—Gas would not be improved by passing through or remaining in contact with a thin layer of oil. We should think that corks impregnated with india rubber would be very good stoppers for bottles containing volatile fluids.

J. H. T., of Mass.—The mineral specimens which you have sent us can be picked up by the cartload from the boulders found in this locality. They are of no value whatever; they are bastard brittle garnets.

F. M. S., of Mo.—The water pipe should always be at the back end, and the steam pipe at the front end of a boiler.

J. C., of Mo.—A piece of hammered cold steel is larger after being tempered than before. You can easily try the experiment.

W. P. W., of N. Y.—Sulphurous water generally contains saline matter in solution, and is not good for steam boilers.

N. D. O., of Ky.—"The Sawyers' Companion" is a guide book for sawyers. There is little or no difference in the power of an engine having a 4½-foot pitman and another a 7-foot pitman, both being of 2-foot stroke. There is a little more friction on the pin of the short than the long pitman, but this is all.

R. L. S., of N. Y.—Two cubic inches of air elevated to 491° Fah., will exert a united pressure of 30 lbs. on the square inch.

J. J., of Ct.—If you wish to preserve thin steel knife-blades from warping when you have cast-iron handles on them, we advise you to cast them in iron chill-molds and not in sand. We do not know any other plan to effect the object you desire.

A. L. L., of Ill.—The moon moves round the earth in a spiral orbit. Some meteorologists assert that it does influence the weather, while others as positively assert it does not, There are a variety of conflicting opinions among learned men on this topic, and it will require a long course of observation to harmonize them.

H. G., of Mich.—Brass castings are rendered clean by pickling them in an acid solution. Use equal parts of sulphuric acid and water, and when the article is steeped a sufficient length of time to remove the black oxyde, take it out and wash in clean rain water, then dry it in warm saw-dust.

D. R., of N. C.—It would be of no advantage to tin your copper-still inside to prevent the action of chlorine gas on the latter metal, as it has a great affinity for the former, and would soon destroy it. Lead is not

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suitable for the interior of a still; it melts at a temperature too low to suit your purpose. An enameled iron still, we think, would answer, but you should first try some experiments with a small, enameled cast-iron vessel to determine the question fully; the expense would be but trifling.

P. G. B, of N. Y.—The silicate of soda consists of silicon or clean white sand, dissolved in a strong caustic soda ley. The common name for it is soluble glass. It has been described in former volumes of the SCIENTIFIC AMERICAN. We think the trouble with you is, that you do not read the numbers carefully.

T. T. J. of Mo.—You can solder brass joints with tinfoil, but by wetting the surface with a solution of sal-ammoniac, you may use common solder for this purpose.

J. R. S., of N. H.—You have been anticipated in propelling boats on the ice by a stern-wheel. There is no work published on the manufacture of salt that would be of much service to you. Take a tour to Syracuse, N. Y., and examine the large works there.

J. M. R., of N. Y.—The article to which you refer was copied, as you stated, and the red ammonia probably meant the prussiate of potash, which has been employed in steel making for its cyanogen. If you use the oxyd of manganese and some pounded charcoal in making steel you will obtain the desired result, we believe. Overman's Metallurgy is a very good work. It is published by H. C. Baird, Philadelphia.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, March 5, 1859:—

A. & H., of N. Y., $25; J. S., of Ga., $15; J. R. H., of N. Y., $30; R. S., of N. Y., $25; F. M., of N. Y., $30; J. S., of Ohio, $20; F. G., of N. Y., $55; D. A. W., of N. Y., $50; R. S. L., of Conn., $30; E. W., of Mass., $25; A. W. P., of N. Y., $55; R. B. B., of Vt., $35; A. & O., of Ill., $55; J. L. H., of Pa., $15; J. H., of Ga., $30; J. G. B., of Ill., $10; E. R. D., of N. Y., $30; J. B., of N. J., $27; J. R., of Mich., $30; J. A. T., of N. Y., $30; K. & B., of L. I., $25; F. W. D., of N. Y., $57; J. C. L., of N. Y., $30; T. S., of Ill., $30; S. B. D., of N. Y., $60; N. D., of N. J., $60; A. S. S., of Mass., $25; T. H., of N. J., $55; J. B., of N. Y., $250; F. & C., of Mass., $25; T. & D., of Iowa. $25; C. S., of Conn., $25; I. W. L., of Mich., $40; R. D., of Vt., $110; J. K. H., of Ind., $10; R. H., of Va., $30; A. D., of N. H., $30; H. L. W., of Mass., $30; J. McL., of Ind., $25; H. S., of R. I., $30; M. R., of Cal., $10; P. A. S., of N. Y., $55; D. B., of N. Y., $25; I. G., of N. Y., $154; J. W. H., of Tenn., $30; G. W. B., of Ala., $30; W. & R., of Ill., $25; M. & P., of Ohio, $30; I. M., of Mich., $25; J. G., of Ga., $30; P. & B., of Conn., $30; H. G., of La., $60; S. H., of Ill., $30; S. W., of Pa., $30; W. H. McC., of Va., $20; N. P., of Ind., $30; G. D. F., of Conn., $20; L. W., of Mich., $10; R. & W., of N. Y., $25. A. W., of Pa., $30; E. W., of R. I., $25; J. W. G., of Vt., $35; W. M. M., of N. Y., $12.; H. L. of N. Y. $35 We are in receipt of $30 in bills on Boston banks, by Adams' Express, with no advices from the person remitting—not even his name. Who is he?

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, March 5, 1859:—

R. & W., of N. Y.; W. H. R., of N. Y.; K. & B., of L. I.; D. B., of N. Y.; R. S. L., of Conn.; I. M., of Mich.; J. W. McL, of Ind.; H. L. W, of Mass.; H. & B., of N. Y.; E. W., of R. I.; F. W. D., of N. Y.; W. McN., of Pa.; M. S. B., of Conn.; G. P. J., of Iowa; D. A. W., of N. Y. (two cases). F. & C., of Mass.; S. E. B., of N. Y.; I. W. L., of Mich.; S. S., of Pa.; L. W., of Mich.; J. H., of Ga.; A. B., of N. Y. (two cases); W. M. M., of N. Y.; A. S. S., of Mass.; C. S., of Conn.; J. G. R., of Miss.; E. W., of Mass.; G. D. F. t of Conn.; W. P. C., of Ohio; J. L. H., of Pa.; J. B., of N. J.; I. G., of N. Y. (two cases).

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office. 37 Park Row, New York. We established, over a year ago, a Branch Office in the City of Washington, on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

Communications and remittances should be addressed to MUNN & COMPANY, No. 37 Park-row, New York.

PORTABLE ENGINES ON WHEELS, MADE from 4 to 30-horse power, for driving threshing machines, saw and grist mills, ore-washers, &c., also hoisting, pumping, and pile-driving, by A. L. ARCHAMBAULT, 15th and Hamilton sts., Philadelphia. 27 4*

MAGIC LANTERNS FOR SUNDAY Schools, Academies, and Public Exhibitions, with a large assortment of scriptural, astronomical, and temperance slides. Mathematical instruments separate and in cases. Microscopes and microscopic preparations. Thermometers, Spyglasses, Surveyor's Compasses, Barometers, Stereoscopes, Electro-Magnetic Apparatus, Camera Obscuras, Rain Gages, Philosophical Apparatus, &c.
McALLISTER & BROTHER, Opticians, 728 Chestnut st., Philadelphia.
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WARTH'S SELF-ACTING WOOD-TURNING LATHES.—The best and most practical now in use; one boy will accomplish the work of four men. State and County rights for sale. Address A. WARTH, care W. H. Bertling, 23 Chambers st., New York, or the manufacturers, who have machines of all sizes on hand. Also a general assortment of machinists' tools. Circulars sent. Address CARPENTER & PLASS, 479 First ave., New York. 27 4*

STEAM ENGINES FOR SALE VERY LOW, to close a concern—one 18, one 12, and three of 8-horse power, with flue boilers; also one second-hand engine of 10-horse power. H. A. CRANE, 29th street near 11th ave., New York. 27 2*

SUPERHEATED STEAM WITHOUT pressure dries green lumber in twelve to thirty hours; grain and meal for two cents a barrel; bakes bread and metal, and is the fire-proof furnace for warming buildings healthfully. Circulars free. Rights low. H. G. BULKLEY, Kalamazoo, Mich. 27 2*

THE SCIENTIFIC AMERICAN SIGNS, for Munn & Co., were painted by Ackerman & Miller. Refers to the Commercial Agency, McKillop & Wood, Park Buildings. All communications for signs, banners, or other ornamental work, attended to with dispatch. ACKERMAN & MILLER, 101 Nassau st., next to the New York Herald Office. 27 3m

FOR SALE VERY LOW—SIX FIRST-CLASS Iron Planers, 8 and 12 feet; two Steam Engines, 25 and 30-horse. Z F. GOODYEAR, New Haven, Conn. 27 7*

WOODWORTH'S PLANING MACHINES of every description, varying in price from $35 to $2,500, and each to plane tongue and groove. Address J. H. LESTER, No. 57 Pearl st., Brooklyn, L. I 27 8*

WILBER & CO.—PATENTS FOR SALE—The Cotton Seed Huller, in connection with the Separator, is capable of working four tuns of rough seed per day. It has a feed of thirty inches on a Colone stone cylinder, revolving in a French burr stone concave; is durable and easily kept in order. The Cotton and Linseed Oil Press, with the direct use of steam and hot air, embraces several patents, and can express from 20 to 25 gallons per hour. In this press bags are superseded by the use of belts, making a saving in labor, wear and tear, of from 50 to 75 per cent, and in cost of machinery about 25 per cent. Persons wishing to purchase the patents for localities or States, or the machines, address CHARLES VANWYCK, No. 103 Fulton st., New York. 1*

WANTED—A SMALL NEW OR SECOND-hand Turning Lathe, for turning oval box bottoms. For particulars, direct to E. C. HERSEY, Boston, Mass. 1*

HOW TO DRAFT LADIES' DRESSES—A half interest can be had by paying for procuring a patent and introducing an invention by which ladies' dresses can be drafted in a much more expeditious as well as more accurate manner, than by any instrument heretofore in use. Said instrument is considered patentable by the editors of the SCIENTIFIC AMERICAN. Address JOHN MACKENZIE, Cleveland, Ohio. 1*

FOR MASTER BUILDERS, JOURNEYMEN Carpenters, and Carpenters' Apprentices—"Carpentry Made Easy; or, the Science and Art of Framing, on a new and improved system, with specific instructions for building balloon frames, barn frames, mill frames, warehouses, church spires, &c. Also a system of bridge-building, with estimate of cost, and valuable tables. Thirty-eight plates and two hundred figures. By Wm. E. Bell, Architect and Builder. Price $3. This work teaches a new system of Framing, by simple and exact rules, given with mathematical precision, yet in language as free from technical terms as the nature of the case will admit, so that a common school-boy can understand them, and every man be his own carpenter, if he chooses. Agents wanted. Sample copy postpaid for $2. Address JAMES CHALLON & SON, Philadelphia. 1c

MATHEMATICAL INSTRUMENTS—A complete assortment for engineers and machinists, in cases or separate pieces. Also school apparatus, as Globes, Magic Lanterns, &c. A priced and illustrated catalogue furnished gratis.
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FOR SALE—PATENT RIGHTS FOR THE following articles:—The best Scale for Detecting Spurious Coin; the best Cultivator Tooth; the best Rice-pounder; the best Churn and Butter-worker; the best Canteen, and several patentable inventions. Address J. DENNIS, JR., Washington, D. C., enclosing a stamp. 26 2*

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FOR SALE OR TO LET ON REASONABLE Terms—A Car Wheel Foundry, with a complete set of modern fixtures, including patterns, suitable for making fifty wheels per day. Located in Newburgh, N. Y. Apply to J. STANTON & CO., Newburgh, N. Y. 25 4*

MACHINERY.—S. C. HILLS, NO. 12 PLATT street, New York, dealer in Steam Engines, Boilers, Planers, Lathes, Chucks, Drills, Pumps; Morising, Tenoning, and Sash Machines, Woodworth's and Daniel's Planers Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 3 e3w

FOUNDRY FACINGS OF EVERY KIND—Lehigh, per barrel, $2 50; sea coal, $1 75; charcoal, $2 25; soapstone, $1 75; clay, sand, and kaolin, $1; leads, 2 to 8cts. L. A. ORCUTT, 21 5*e4w Albany, N. Y.

JOHN W. QUINCY & CO., IMPORTERS AND Dealers in Metals, &c., No. 98 William st., New York. Banca Tin, Spelter, Ingot Copper, Lead, Antimony, Babbitt Metal, Mount Hope Cut Nails, Ames' Shovels and Spades, &c. 12 13e5w*

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GROVER & BAKER'S CELEBRATED Family Sewing Machines—495 Broadway, New York; 18 Summer st., Boston; 730 Chestnut st., Philadelphia; 137 Baltimore st., Baltimore; 58 West Fourth st., Cincinnati. A new style—price $50. This machine sews from two spools, as purchased from the store, requiring no re-winding of thread. It hems, fells, gathers and stitches in a superior style, finishing each seam by its own operation, without recourse to the hand-needle, as is required by other machines. It will do better and cheaper sewing than a seamstress can, even if she works for one cent an hour. ☞ Send for a circular. 19 13

WROUGHT IRON PIPE FROM ⅛ OF AN inch to six inches bore; Galvanized Iron Pipe (a substitute for lead), Steam Whistles, Stop Valves and Cocks, and a great variety of fittings and fixtures for steam, gas, and water, sold at wholesale and retail. Store and Manufactory 76 John, and 29, 31 and 33 Platt st., New York. JAMES O. MORSE & CO. 18 13

WATER WHEELS—BALDWIN'S "UNIVERSAL TURBINE" gives better satisfaction than any other water wheel, the overshot not excepted. It gives a higher percentage, with a partially raised gate, than any other. It gives from 75 to 97 per cent, according to the size of wheel and head applied. When you purchase a water wheel, my friends, get the best, if you would save money, as the best is always cheapest in the end, and you will have to make no changes. For further information address, S. K. BALDWIN, Laconia, N. H.

"We have examined a model and drawings of the 'Universal Turbine,' and believe it to be a scientific water wheel, and one calculated to give the greatest amount of power from a limited quantity of water."
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SECOND-HAND MACHINERY AT VERY low prices for cash.—Steam Engines, Slide Lathes, Planing Machines, Drills, Slotting Machines, &c.; also a variety of Mortising, Tenoning, and Sash Machines, &c., all warranted in good running order. Address CHARLES G. WILLCOX, 135 North Third st., Philadelphia, Pa. 23 6*

BUTCHER'S IMPERIAL CAST STEEL FILES—The subscribers keep constantly on hand a very large assortment of the above celebrated files, which are acknowledged to be unequaled in quality, and to which the attention of railroad companies engineers, and machinists is invited.
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CROSSETT'S PATENT STAVE CUTTER—Patented July 1, 1844; re-issued March 2, 1858; renewed and extended June 26, 1858. The above-mentioned machine is warranted to cut more and better staves than any other machine in the United States, and is the most simple, cheap, and durable. I hereby caution all persons against using and vending said machine (the main features of which consist in the stationary knife and vibratory bed-piece) without the legal right to do so. Offenders will be dealt with according to law. All persons wishing an interest in the extended term of said patent can obtain it by addressing the undersigned at Joliet, Ill.
21 7* GEO. I. CROSSETT, Assignee.

WOODWORKING MACHINERY—WOODworth's Daniels' and Gray & Woods' planing machines. Sash molding, tenoning and mortising machines. Scroll saws, arbors, &c., made of good materials, and by experienced workmen, at Worcester, Mass., by BALL & WILLIAMS. 22 10*

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CALIFORNIA AGENCY FOR PATENTS—WETHERED & TIFFANY, San Francisco, will attend to the sale of patent rights for the Pacific coast. References:—Messrs. Tiffany & Co., New York; Wethered, Brothers, Baltimore; George W. Ponds & Co., Boston. 23 13*

SCREW BOLTS—WITH SQUARE, ROUND, or Countersunk Heads, Bolt-ends, Turn Buckles, Square-head Wood Screws, Tap Bolts, Machine Screws, Ratchet and Breast Drills, Carriage Bolts, Nuts, Washers, &c., for sale by CHARLES MERRILL & SONS, No. 556 Grand st., New York. 24 5*

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No. 438 Broome st., first door from Broadway, New York.
13 13* JOHN HOWE, JR., Brandon, Vt.

BOILER FLUES FROM 1 ¼ INCH TO SEVEN inches outside diameter, cut to any length desired, promptly furnished by JAMES O. MORSE & CO., 76 John st., New York. 18 13

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CARY'S CELEBRATED DIRECT ACTING Self-Adjusting Rotary Force Pump, unequalled in the world for the purpose of raising and forcing water, or any other fluid. Manufactured and sold by
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Also for sale by J. C. CARY, 240 Broadway, New York City. 12 tf

HOLLY'S PATENT ROTARY PUMP and Rotary Engine has no valves or packing, and is the most simple, durable, and effective Force Pump in use, as numerous certificates in our possession will prove. Also manufacturers of the celebrated Rotary Steam Fire Engines, with which we challenge the world, as to portability, time of getting at work, low pressure of steam used, quantity of water discharged, and distance forced. There are now four of these machines in use in the city of Chicago, and one in the city of Boston, Mass. Third class engine weighs about 7,000 pounds, and forces a 1⅛-inch stream 200 feet, or two 1-inch streams 180 feet, or one 1¼-inch stream 240 feet, with a steam pressure of from 40 to 60 pounds. Generates a working pressure of steam in from 4 to 6 minutes from cold water. Descriptive catalogues of pumps, engines, &c., sent to all applicants.
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FELT FOR STEAM BOILERS, PIPES, Ship-sheathing, and all varieties of felting manufactured to order by JOHN H. BACON, Winchester, Mass. 14 13*

IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 14 13

WOODWORTH PLANERS—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York. 1 26

A MESSIEURS LES INVENTEURS—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.
MUNN & CO. Scientific American Office, 37 Park Row, New York.

Zur Beachtung für Erfinder.
Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an
Munn & Co.,
37 Park Row, New-York.
Auf der Office wird deutsch gesprochen.

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Science and Art.

Fixing Chalk Drawings.

A new method of fixing chalk drawings has been communicated to the Academy of Sciences in Paris by M. Ortlieb. A chalk drawing cannot be covered with gum by a brush, because the action would remove the sketch. The new method consists in placing a very thin sheet of bibulous paper on the drawing, then passing a brush containing the gum or glutin solution over this. The glutinous matter penetrates through the sheet, and produces the desired effect, when the bibulous paper may be carefully lifted off. Another method superior to this consists in executing the chalk drawings on thick unsized paper like that used for copperplate printing, then applying the solution of gum to the back of the sheet. A sufficient quantity will pass through to protect the chalk after it becomes dry. The silicate of potash answers well for this purpose as a substitute for gum and isinglass.

Auriferous or Gold Quartz.

At a period not very remote, the idea was prevalent among geologists that gold quartz decreased in richness as the veins descended, until at about sixty feet deep they ceased to be fit for profitable working. If this theory were true, it would not be difficult to calculate the duration of quartz-mining in any country—it would soon cease to be profitable. We learn from the Melbourne (Australia) *Mining Journal* that this theory is untenable, and that it has been abandoned by Sir Roderick Murchison and by Mr. Selwin—the government geologist of that colony. It seems that certain commissioners—reputed to be excellent geologists and metallurgists—deputied by the government, had reported that it was injudicious to erect expensive and permanent buildings for quartz-mining, because of the poverty of deep quartz veins; hence quartz-mining was discouraged and discountenanced in Australia until within a very recent period, and not until the practice of quartz-miners had disproved the hypothesis of superficial British authorities. In North Carolina and California quartz veins several hundred feet deep are worked profitably; and there seems to be very little difference, if any, in the richness of the "lode" as they descend. About two hundred quartz mills are now in operation in Australia, and the number is rapidly increasing. The *Mining Journal* states that the crushers heretofore used in that colony have not been made of good materials. Some new California machines have been introduced; these are expected to give more satisfaction.

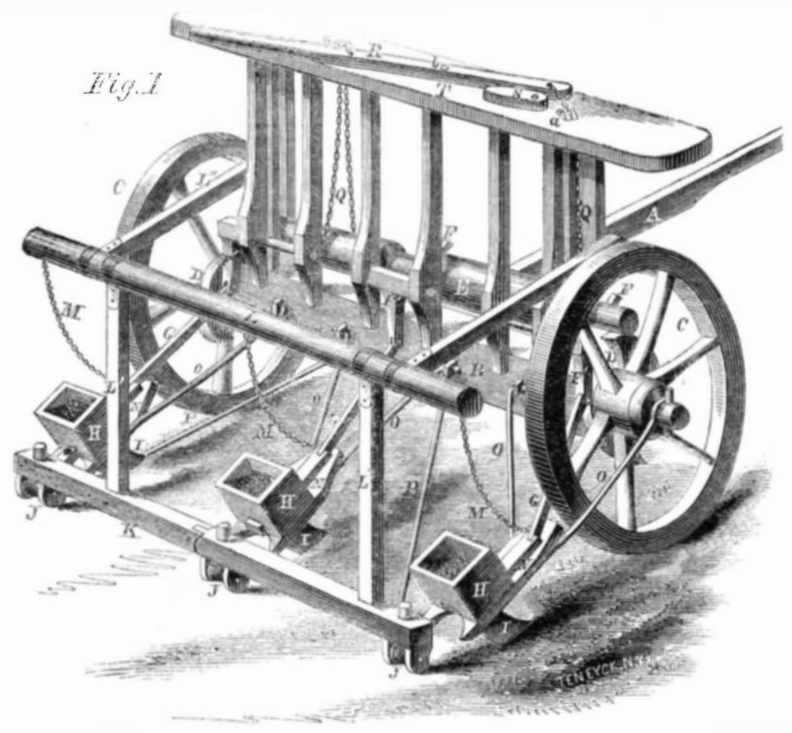
Improved Seed Planter.

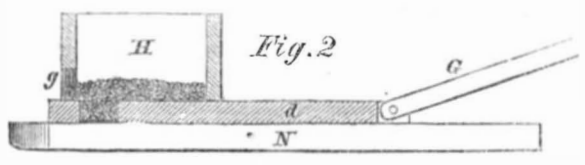
The seed planter which forms the subject of our illustration is very simple and easily constructed, and plants seed with great regularity, the planting device consuming but little power.

Our illustrations show, in Fig. 1 a perspective view of the whole machine, and in Fig. 2 a section of the seed-box and slide.

A is the shaft-pole attached to a cross-beam or strong axle, B, which is supported by two wheels, C, each of them carrying two cams, D. On these rest the ends of a weighted bar, F, which is raised by the cams and falls by its own gravity. In falling it depresses the rocker levers, F, and throws out the levers, F′, that being connected with the link, G, operate the seed-slide, *d*, throwing its cavity with contained seed under the brush, *g*, of the seed-box, H, when it can discharge the seed through the slot in the back part of the peice, N, by which and the bars, O, the planter is attached to the framing. Each planter has a share, I, and immediately after follows a covering wheel, J, mounted on a jointed peice, K, which can accommodate itself to the level of the ground. This bar, K, is kept in position by bars, P, and standards, L′, that are fastened to the cross-roller, L, so that it is free to move in its supports and in the attachments of the links, L″, that connect L with the main frame. This roller has secured to it three chains, M, the other ends of which are connected with the planters, H, so that by turning L they can be lifted out of the way when the machine is passing from one field to another, or not planting. The weighted bar, E, can also be lifted out of the way so as not to rest upon the cams, when desired, by the chains, Q, that loop around it and passing over pulleys, *a*, in the upper frame, T, are secured to the lever, R; this being pulled out by its handle it moves upon its center, *b*, and

DRAKE'S SEED PLANTER.

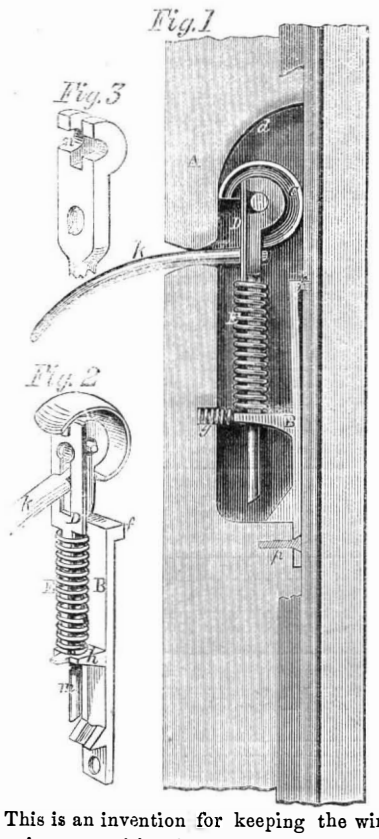




being held in proper position by the dog, or catch, S, the weighted bar is kept out of the way of the cams, D. A seed slide provided with a cut-off as well as well as slide may also be applied if desired, but the form we have engraved is, as we said before, cheap and simple and, at the same time, strong and efficient.

The inventor and patentee is Nathaniel Drake, of Newton, N. J., who will be happy to give any further information. It is the subject of several patents, the last of which is dated Dec. 14th, 1858.

Williams' Sash-Fastener.



This is an invention for keeping the window in any position in the sash, and is very simple and efficient. Fig. 1 is a view of the window-frame with it attached, Fig. 2 shows the fastening detached, and Fig. 3 a view of the center casting.

The window-rail, A, is mortised to receive the fastening. The plate, B, of the fastening has a catch, *f*, at its upper end, which enters a suitable notch or mortise in the window-frame when the sash is down, by which means the window is secured, so that it cannot be opened upon the outside, the catch is forced into its mortise by the spring, *g*. Through an ear, *h*, projecting from the inner side of the plate, B, passes the shank, *m*, into a hole, *i*, in which passes the end of the lever, *k*, by which the fastening is operated. The shank, *m*, has near its upper end notches or bearings, which carry the shaft of the fastening roll, C. This roll is held in its bearings by a plate, D, the lower end, C, of which enters the top end of a spiral spring, E, which encircles the shank, *m*. At its upper end the plate, D, being forced up by the spring, E, presses against the roll, C, and forces it into the position with respect to the shank.

The spring, E, also performs the office of forcing the roll, C, up against the inclined surface, *d*, of the mortise in the sash rail. The plate, B, is confined loosely to the sash rail by a screw, *p*, so that it shall be allowed to move sufficiently to and from the window-frame, to allow the catch, *f*, to be withdrawn from its mortise when the sash is to be raised, which is done by raising the handle or lever, *k*, and thereby depressing the roller, C, away from the incline, *d*, the pressure of the spring, E, upon the ear, *h*, throws back the plate, B, and withdraws the catch, *f*; the sash may then be raised, and when the lever, *k*, is set free, the roll is forced up into the position seen in Fig. 1; and if now the weight of the sash be left free, the roll, C, will roll slightly, and bind between the window-frame and the incline, *d*, by which means the further descent of the sash is prevented.

The inventor is Turner Williams, of 138 Broadway, Providence, R. I., and he patented it October 26, 1858. He will furnish any information upon being addressed as above. A specimen can be seen at the agents, New England Butt Co., No. 30 Platt st., New York.

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